

UNIVERSITY OF PENNSYLVANIA

**PERFORMANCE AUDIT OF INCURRED COSTS FOR
NATIONAL SCIENCE FOUNDATION AWARDS
FOR THE PERIOD MARCH 1, 2014 TO FEBRUARY 28, 2017**

**NATIONAL SCIENCE FOUNDATION
OFFICE OF INSPECTOR GENERAL**

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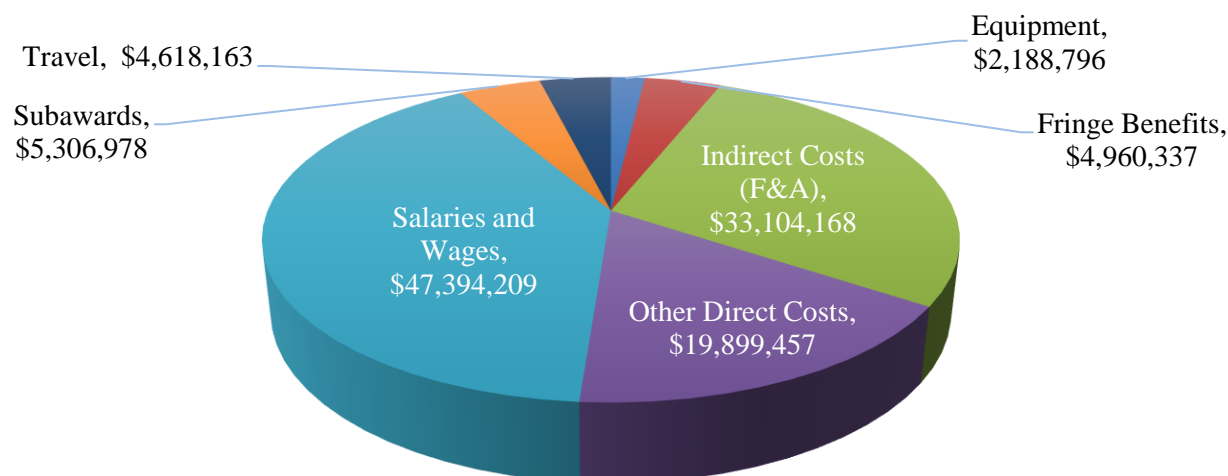
I. BACKGROUND

The National Science Foundation (NSF) is an independent Federal agency whose mission is to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense. Through grant awards, cooperative agreements, and contracts, NSF enters into relationships with non-Federal organizations to fund research and education initiatives and to assist in supporting its internal financial, administrative, and programmatic operations.

Most Federal agencies have an Office of Inspector General (OIG) that provides independent oversight of the agency's programs and operations. Part of NSF OIG's mission is to conduct audits and investigations to prevent and detect fraud, waste, and abuse. In support of this mission, NSF OIG may conduct independent and objective audits, investigations, and other reviews to promote the economy, efficiency, and effectiveness of NSF programs and operations, as well as to safeguard their integrity. NSF OIG may also hire a contractor to provide these audit services.

NSF OIG engaged Cotton & Company LLP (referred to as "we") to conduct a performance audit of costs incurred by the University of Pennsylvania (UPenn). UPenn is a private institution that reported \$713 million in grant and contract revenue earned from Government sources in fiscal year (FY) 2017. As illustrated in Figure 1, UPenn's general ledger supported more than \$117 million in expenses claimed on 467 NSF awards during our audit period of performance (POP), or March 1, 2014 through February 28, 2017. Figure 1 also shows costs claimed by budget category based on the accounting data that UPenn provided.

Figure 1. Costs Claimed by NSF Budget Category, March 1, 2014, through February 28, 2017



Source: Auditor analysis of accounting data provided by UPenn.

This performance audit, conducted under Order No. D16PB00552, was designed to meet the objectives identified in the Objectives, Scope, and Methodology (OSM) section of this report (Appendix C) and was conducted in accordance with *Generally Accepted Government Auditing Standards* (GAGAS), issued by the U.S. Government Accountability Office. We communicated the results of our audit and the related findings and recommendations to UPenn and NSF OIG. We will include UPenn's full response in Appendix B.

II. AUDIT RESULTS

As described in the OSM section of this report, this performance audit included obtaining transaction-level data for all costs that UPenn claimed on NSF awards during the audit period. We judgmentally selected a sample of 300 transactions for testing, totaling \$4,732,885.

UPenn did not always comply with all Federal, NSF, and UPenn regulations and policies when allocating expenses to NSF awards. It needs improved oversight of the allocation and documentation of expenses charged to NSF awards to ensure that it supports that costs claimed are reasonable, allocable, and allowable in accordance with those regulations and policies. As a result, we questioned \$265,957 in direct and indirect costs that UPenn claimed during the audit period, as follows:

- \$149,765 of unsupported expenses
- \$56,475 of inappropriately applied indirect costs
- \$50,360 of unallowable expenses
- \$8,853 of inappropriately allocated expenses
- \$504 of incorrectly applied fringe benefits

We provide a breakdown of the questioned costs by finding in Appendix A of this report.

Finding 1: Unsupported Expenses

UPenn was unable to provide adequate documentation to support the allocability, allowability, and reasonableness of \$149,765 of expenses charged to NSF awards during the audit period, as required by relevant Federal policies.¹ Specifically:

- In June 2014, UPenn charged NSF Award No. (b) (4) for \$30,000 in participant support costs (PSCs) related to an invoice from the (b) (4) (b) (4) that requested a lump-sum payment for “(b) (4) 14 STUDENT GRANTS” without including detailed support for the actual expenses incurred. NSF Award No. (b) (4) provided UPenn with travel funds to support student participation in the (b) (4) Workshop (b) (4); however, UPenn’s budget justification specifically stated that UPenn would reimburse awardees for actual travel expenses incurred and would not provide an unsupported lump-sum reimbursement. Despite this statement, UPenn provided the entire \$30,000 budget for this award as a lump-sum reimbursement to (b) (4) and was unable to provide detailed support for the actual expenses incurred. As such, we were unable to verify that UPenn used the funds to reimburse actual, reasonable, and allowable expenses. Therefore, we are questioning all costs associated with this invoice.
- In June 2014, UPenn charged NSF Award No. (b) (4) for \$22,892 to reimburse the University of (b) (4) (b) (4) for two-thirds of the costs that (b) (4) incurred to host an award-related summer school program. The majority of the expenses included on (b) (4) invoice appear to be reasonable; however, the invoice included \$9,524 for one dinner at a price of \$122 per conference participant, which is significantly greater than the \$23 dinner per diem allowable for (b) (4). We requested that UPenn provide documentation to support that the meal costs incurred were (b) (4) (b) (4) unable to verify that UPenn used these funds to reimburse actual, reasonable, and allowable expenses, we are questioning all costs associated with this dinner.
- In August 2014, UPenn charged NSF Award No. (b) (4) for \$1,739 in printing expenses related to “Flyers/Brochures/Menus.” The award budget did not contain funding to support publication expenses, and UPenn was unable to support how this expense benefitted the award. Because we were unable to verify that UPenn used these funds to reimburse actual, reasonable, and allowable expenses, we are questioning all costs associated with the publication expenses.

¹ According to 2 Code of Federal Regulations (CFR) §200.403(a) and 2 CFR §220 Appendix A. Section C.2., a cost must be reasonable and allocable to be allowable under a Federal award. Further, §200.403(g) states that a cost must be adequately documented in order to be allowable on a Federal award, and 2 CFR §215.21(b)(7) states that an awardee’s financial management system shall provide accounting records that are supported by source documentation.

- In December 2014 and February 2016, UPenn charged \$32,000 and \$48,000, respectively, to NSF Award No. (b) (4) for payments made to the (b) (4) (the Corporation) for consulting services rendered by the company's (b) (6), a UPenn employee who served as Senior Personnel on this award. UPenn's annual reports for this award identified this individual as a UPenn employee who participated on the award; however, UPenn appears to have treated this employee as an independent consultant for the Corporation when paying for his grant-related services. Because UPenn did not enter into a consulting agreement with the Corporation to allow this employee to provide grant-related services, we were unable to verify the scope of the work performed, when the employee performed the work, or how UPenn determined the amount paid to be reasonable or allowable.² Further, we noted that according to UPenn's procurement policies, UPenn must pay employees using its payroll system; therefore, UPenn may not treat them as independent contractors.³ As a result, we are questioning all costs associated with the consulting services.
- In June 2015, UPenn charged NSF Award No. (b) (4) for \$2,328 in transcription services provided by (b) (4). UPenn had budgeted funding for transcription services; however, UPenn did not enter into a consulting agreement for these services. As a result, we were unable to verify the scope of the work performed, when the consultant performed the work, or how UPenn determined the amount paid to be reasonable or allowable. Therefore, we are questioning all costs associated with the consulting expense.
- In July 2015, UPenn charged NSF Award No. (b) (4) for \$760 in overtime pay provided to a graduate student. The grant's budget included funding to support graduate students; however, UPenn was unable to provide a timesheet to support the number of overtime hours charged to the NSF award. As a result, we were unable to verify the allowability of these expenses. Therefore, we are questioning all costs associated with the overtime expenses.
- In October 2015, UPenn charged NSF Award No. (b) (4) for \$1,428 in materials purchased in the final month of the award. The Principal Investigator (PI) stated that the purchase was necessary to complete work on the grant; however, UPenn was unable to produce adequate documentation to support the sampled expense.⁴ As a result, we were unable to verify the allowability of the materials purchased. Therefore, we are questioning all costs associated with the materials expense.
- In December 2015, UPenn charged NSF Award No. (b) (4) for \$2,606 in travel expenses for round-trip airfare to (b) (6) to enable a graduate student to attend a grant-related workshop. The student's attendance at the workshop appears to be related to the

² UPenn stated that the payment amounts were based on the co-PI's UPenn salary; however, the invoices indicated that the amounts invoiced were based on the grant budget.

³ UPenn's Financial Policy Manual, Procurement/Disbursement Policy 2319.4 states that UPenn must treat employees as employees for all work, regardless of the source of the payment.

⁴ UPenn was unable to provide an invoice to support this expense; instead, it provided a \$1,200 quote dated August 2015 and a handwritten note that stated, "Order Placed 8/7/15."

scope of the award; however, the receipt that UPenn provided to support the airfare expense did not identify the traveler, the airline, or the airfare class purchased.⁵ As a result, we were unable to verify the allowability of the purchased airfare. Therefore, we are questioning all costs associated with the graduate student's airfare.

- In June 2016, UPenn charged NSF Award No. (b) (4) for \$836 in registration fees that the principal investigator (PI) incurred to attend a grant-related conference. The PI's attendance at the conference appears to be related to the scope of the award; however, UPenn was unable to provide invoices to support the conference registration fees. As a result, we were unable to verify the allowability of these expenses. Therefore, we are questioning all costs associated with the conference registration fees.
- In September 2016, UPenn charged NSF Award No. (b) (4) for \$20,544 in professional service expenses because the Staff Director of UPenn's (b) (6) (b) (6) requested that UPenn pay the "sum of unpaid invoices to (b) (6) (for services to (b) (6) prior to August 1, 2016." UPenn provided documentation to support this individual's hourly contractor appointment at (b) (6); however, when we requested copies of the "unpaid invoices," UPenn stated that the payment amount "encompassed charges that were payable but had not been invoiced." Because UPenn was unable to support the sampled payment through invoices or timesheets, we were unable to verify the scope of the work performed, when the contractor performed the work, or how UPenn determined that the amount paid was reasonable or allowable. Therefore, we are questioning all costs associated with the consulting expense.

UPenn does not have appropriate policies and procedures in place to ensure that it always retains sufficient documentation to support that costs charged to Federal awards are allocable, reasonable, or allowable. As a result, we were unable to verify that all sampled costs were allowable on the NSF awards charged. Therefore, we are questioning \$149,765 of unsupported expenses, as follows:

⁵ Specifically, UPenn provided an Orbitz receipt that only stated that the amount claimed related to an "Airline Ticket (1)" purchased on September 24, 2015.

Table 1. Unsupported Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
June 2014 Unsupported PSC Expense	(b) (4)	2014	\$30,000
June 2014 Unsupported Dinner Expense	(b) (4)	2014	9,524
August 2014 Unsupported Printing Expense	(b) (4)	2015	1,739
December 2014 Unsupported Consulting Expense	(b) (4)	2015	32,000
February 2016 Unsupported Consulting Expense	(b) (4)	2016	48,000
June 2015 Unsupported Transcription Expense	(b) (4)	2015	2,328
July 2015 Unsupported Overtime Expense	(b) (4)	2016	760
October 2015 Unsupported Materials Expense	(b) (4)	2016	1,428
December 2015 Unsupported Airfare Expense	(b) (4)	2016	2,606
June 2016 Unsupported Conference Expense	(b) (4)	2016	836
September 2016 Unsupported Consulting Expense	(b) (4)	2017	<u>20,544</u>
Total Questioned Costs			<u>\$149,765</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$149,765 in questioned costs and direct UPenn to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UPenn to strengthen the administrative and management controls and processes over obtaining and maintaining sufficient supporting documentation. Processes could include:
 - a. requiring subawardees to submit itemized receipts, as requested, to support how they expended funds received from UPenn; and,
 - b. providing periodic training to all employees who incur or process expenses that may be charged to Federal awards, to provide the employees with guidance on how to provide, obtain, and maintain sufficient supporting documentation.
3. Direct UPenn to update its procurement policies to require that personnel establish a formal subaward, subcontract, or independent contractor agreement for all external services provided or invoiced to UPenn. Formal agreements should include:
 - a. a defined scope of work,
 - b. an effective period of performance, and,
 - c. approved labor rates and/or other relevant payment terms and conditions.

4. Direct UPenn to strengthen the administrative and management controls over the processing of invoices submitted by independent contractors. Processes should include verifying that a UPenn employee did not provide the invoiced services.

University of Pennsylvania Response

- With regard to the \$30,000 in questioned PSCs on NSF Award No. (b) (4), UPenn agreed that it provided a single lump-sum payment to (b) (4) and that the invoice provided to support UPenn's share of the (b) (4) costs did not include detailed line-item expenses. However, UPenn disagreed that the costs were not allocable, allowable, and reasonable; instead, it asserted that the invoice was based on the activities identified in the Statement of Work (SOW) and the budget justification. Therefore, UPenn disagreed with our recommendation that it refund NSF for all PSCs related to this workshop.
- With regard to the \$9,524 in questioned dinner expenses on NSF Award No. (b) (4), UPenn agreed to strengthen administrative and management controls over obtaining and maintaining sufficient documentation by providing periodic training to staff responsible for reconciling and processing expenses charged to Federal awards. However, UPenn disagreed with our questioning of the costs incurred to host the dinner at (b) (4). UPenn asserted that as the lead site, it had agreed that it would cover two-thirds of the dinner expenses, and that (b) (4) had provided UPenn with a detailed, 15-line invoice that outlined the total cost for all participants. Further, UPenn noted that using the \$23 per diem rate as a baseline for determining the reasonability of the dinner expenses was not appropriate, as the conference cost included items such as space rental, audio/visual equipment rental, and other surcharges that are customarily added into the price for meals at conferences. Therefore, UPenn disagreed with our recommendation that it refund NSF for all costs associated with this dinner.
- With regard to the \$1,739 in questioned printing expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to strengthen administrative and management controls over obtaining and maintaining sufficient documentation by providing periodic training to staff responsible for reconciling and processing expenses charged to Federal awards. UPenn asserted that it was not required to request approval before incurring this expense and that it incurred the expense in support of the project. However, UPenn did not contest this finding because it was unable to locate documentation to demonstrate how the expense benefitted the project.
- With regard to the \$80,000 in questioned consulting expenses on NSF Award No. (b) (4), UPenn noted that it had strengthened controls around the independent contractor and limited engagement processes in FY 2018 and further stated that it will continue to emphasize training and expectations for complying with UPenn policies for managing payments to consultants. However, UPenn disagreed with our questioning of these costs. Specifically, UPenn disagreed that the scope of the work and the period in which the employee performed the work could not be verified, as the PI approved the payment of the corporation's invoices based on the work completed, and the proposal included information regarding the scope of this work. Therefore, UPenn disagreed with

our recommendation that it refund NSF for all costs associated with these consultant payments. UPenn did acknowledge the possibility that its administrators erroneously did not pay these expenses through UPenn's payroll system during periods in which the individual was a part-time UPenn employee because the services invoiced did not appear to be not part of the individual's UPenn teaching duties.

- With regard to the \$2,328 in questioned transcription expenses on NSF Award No. (b) (4), UPenn noted that it had strengthened controls around the independent contractor and limited engagement processes in FY 2018. UPenn stated that it will continue to emphasize training and expectations for complying with UPenn policies for managing payments to consultants. However, UPenn disagreed with our questioning of these costs. Specifically, UPenn noted that transcription costs were included in the SOW and budget justification and that it had paid the transcriptionist the "going rate at the time the work was performed." As a result, UPenn disagreed that the scope of the work, the timing of the work, and the reasonableness and allowability of the amount paid to the consultant could not be verified. Therefore, UPenn disagreed with our recommendation that it refund NSF for all costs associated with these consultant payments.
- With regard to the \$760 in questioned overtime expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and noted that it will implement a new human resource, payroll, and financial management platform in July 2019 that should strengthen administrative and management procedures over allocating salary expenses to sponsored awards. Although UPenn asserted that the graduate student's work supported this grant, because the department was unable to locate a timesheet to support the overtime hours associated with this transaction, UPenn did not contest this finding.
- With regard to the \$1,428 in questioned materials expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs. Although UPenn asserted that the PI used these materials and supplies to complete grant-related research aims, it did not contest this finding.
- With regard to the \$2,606 in questioned airfare expenses on NSF Award No. (b) (4), UPenn noted that it will remind faculty and staff of the importance of complying with UPenn travel policies and stated that it will encourage refresher training on its Travel and Expense Management (TEM) system. However, UPenn disagreed with our questioning of these costs. UPenn noted that, although it was unable to retrieve the airfare details requested, the total cost of the airfare to (b) (6) was reasonable, and there was no substantive or UPenn policy-related reason to refuse the student's reimbursement based on the documentation provided. Therefore, UPenn disagreed with our recommendation that it refund NSF for all costs associated with these travel expenses.
- With regard to the \$836 in questioned conference expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and noted that it will remind faculty and staff of the importance of complying with UPenn travel policies and will encourage refresher training on its TEM system. UPenn noted that, because it was unable to locate the invoice to support the conference registration fee, it did not contest this finding.

- Regarding the \$20,544 in questioned consulting expenses on NSF Award No. (b) (4), UPenn noted that it has implemented strengthened controls around independent contractor and limited engagement processes that specifically address requirements for executing purchase orders (POs), which it believes will mitigate the risk of personnel disbursing payments without obtaining invoices and supporting documentation. However, UPenn disagreed with our questioning of these costs. UPenn disagreed that it was unable to provide support for the sampled payment, as the PI confirmed the work performed and approved the payment based on the SOW. Therefore, UPenn disagreed with our recommendation that it refund NSF for all costs associated with this consultant payment.

Auditors' Additional Comments

Our position regarding this finding does not change. Specifically:

- With regard to the \$30,000 in questioned PSCs on NSF Award No. (b) (4), because UPenn did not provide any additional documentation to support these costs, we are still unable to verify that it used the PSCs to reimburse actual travel expenses.
- With regard to the \$9,524 in questioned dinner expenses on NSF Award No. (b) (4), UPenn was unable to provide a document supporting that UPenn and (b) (4) had agreed to split the costs of this dinner. Further, the invoice included separate lines for space rental and audio/visual equipment rental costs, and we did not include these expenses in the questioned costs. Because UPenn did not provide any additional documentation to support these costs, we are still unable to verify that UPenn used these funds to reimburse actual, reasonable, and allowable expenses.
- With regard to the \$1,739 in questioned printing expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$80,000 in questioned consulting expenses on NSF Award No. (b) (4), UPenn stated that the PI's approval of the invoice supports the allowability of this expense; however, because UPenn was unable to provide documentation to support the rate at which the Corporation billed these services, and because the invoices did not indicate when the individual performed the work, we are still unable to verify that the individual performed this work during the award's POP, or that the amount paid to the consultant was reasonable or allowable.
- With regard to the \$2,328 in questioned transcription expenses on NSF Award No. (b) (4), we acknowledge that the rate at which UPenn paid the consultant matched the rates included on other invoices that UPenn received from the consultant for similar work. However, because UPenn did not enter into an agreement with this consultant to provide transcription services at this rate, we are still unable to verify the scope of the work performed or when the consultant performed the work.

- With regard to the \$760 in questioned overtime expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$1,428 in questioned materials expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$2,606 in questioned airfare expenses on NSF Award No. (b) (4), UPenn was unable to provide a receipt to support the traveler, airline, or fare class; therefore, we are still unable to verify the allowability of the airfare purchased.
- With regard to the \$836 in questioned conference expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$20,544 in questioned consulting expenses on NSF Award No. (b) (4), UPenn did not provide additional documentation to support these costs; therefore, we are still unable to verify when the contractor performed the work or how UPenn determined that the amount paid was reasonable.

Finding 2: Inappropriate Application of Indirect Costs

UPenn inappropriately applied indirect costs to expenses that it should have excluded from its indirect cost base. As a result, UPenn charged NSF for \$56,475 in unallowable indirect costs. Specifically:

- ***Indirect Costs Inappropriately Applied to PSCs⁶***

UPenn did not appropriately account for costs incurred to host conference and workshop participants as PSCs, in accordance with its NSF award budgets. As a result, UPenn inappropriately charged indirect costs to two NSF awards. Specifically:

- In December 2014, UPenn charged NSF Award No. (b) (4) for \$3,075 in indirect costs that UPenn had applied to lodging expenses for participants in an (b) (4) workshop.
- In May 2016, UPenn charged NSF Award No. (b) (4) for \$6,026 in indirect costs that UPenn had applied to lodging expenses for six students participating in a Research Experiences for Undergraduates program.

⁶ 2 CFR §200.68 states that PSCs are excluded from the Modified Total Direct Cost (MTDC) base, and Part I, Chapter 2, Section C.2.g(v) of NSF *Proposal and Award Policies and Procedures Guides* (PAPPGs) 07-140 and 15-1 state that NSF generally does not allow indirect costs on PSCs.

- ***Indirect Costs Inappropriately Applied to Graduate Student Stipends***⁷

UPenn did not appropriately identify and account for stipend payments that it provided to graduate research fellows. As a result, UPenn inappropriately charged indirect costs to six NSF awards. Specifically:

- In May 2015, UPenn charged NSF Award No. (b) (4) for \$1,451 in indirect costs applied to fellowship stipends.
- In August 2015, UPenn charged NSF Award No. (b) (4) for \$2,175 in indirect costs applied to fellowship stipends.
- In September 2015, UPenn charged NSF Award No. (b) (4) for \$1,500 in indirect costs applied to fellowship stipends.
- In January 2016, UPenn charged NSF Award No. (b) (4) for \$783 in indirect costs applied to fellowship stipends.
- In March 2016, UPenn charged NSF Award No. (b) (4) for \$1,510 in indirect costs applied to fellowship stipends.
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$1,567 in indirect costs applied to fellowship stipends.

- ***Indirect Costs Inappropriately Applied to Equipment Expenses***⁸

UPenn inappropriately accounted for equipment purchases as materials and supplies expenses.⁹ As a result, it inappropriately charged indirect costs to four NSF awards. Specifically:

- In June 2015, UPenn charged NSF Award No. (b) (4) for \$5,715 in indirect costs associated with the purchase of a precision laminator.
- In March 2016, UPenn charged NSF Award No. (b) (4) for \$6,382 in indirect costs associated with the purchase of a replacement part for a laser.

⁷ According to UPenn's *Negotiated Indirect Cost Rate Agreements* (NICRAs) published from July 1, 2004, through June 30, 2014, student support costs (including stipends and fellowships) should be excluded from the indirect cost base. According to 2 CFR 220, Appendix A, Section G.2; 2 CFR §200.68; and UPenn's NICRAs published from July 1, 2014, through June 30, 2017, fellowships should be excluded from the MTDC base.

⁸ According to 2 CFR 220, Appendix A, Section G.2; 2 CFR §200.68; and UPenn's NICRAs published from July 1, 2004, through June 30, 2017, equipment and capital expenditures should be excluded from the indirect cost base.

⁹ According to UPenn's Financial Policy Manual, UPenn should have accounted for each of the assets identified in this finding as equipment, as each asset had a cost in excess of \$5,000 and a useful life of more than 1 year.

- In July 2016, UPenn charged NSF Award No. (b) (4) for \$4,107 in indirect costs associated with the purchase of a force sensor.
- In December 2016, UPenn charged NSF Award No. (b) (4) for \$5,277 in indirect costs associated with the purchase of a server.
- ***Indirect Costs Inappropriately Applied to Consultant Costs***¹⁰

UPenn inappropriately accounted for subaward expenses as consulting costs.¹¹ As a result, it inappropriately charged indirect costs to an NSF award. Specifically:

- In August 2016, UPenn charged NSF Award No. (b) (4) for \$16,812 in indirect costs associated with laboratory services that UPenn obtained from (b) (4) University; however, UPenn should have invoiced these costs under its existing subaward agreement with (b) (4) to provide services related to this NSF award.
- ***Indirect Costs Inappropriately Applied at the Wrong Rate***¹²

UPenn inappropriately applied indirect costs at the rate included in the award's proposal rather than at the rate in effect as of the effective date of the award. Specifically:

- In September 2014, UPenn charged NSF Award No. (b) (4) for \$95 in indirect costs that exceeded the allowable indirect cost rate, as UPenn had applied indirect costs to salary expenses at the negotiated indirect cost rate included in the award proposal (i.e., 60 percent) rather than at the rate that was in effect as of the effective date of the award (i.e., 59 percent).

UPenn does not have sufficient policies and procedures in place to ensure that it appropriately applies indirect costs to PSCs, capitalized equipment, or other costs that should not be included in the Modified Total Direct Cost (MTDC) base. Therefore, we are questioning \$56,475 of inappropriately applied indirect costs, as follows:

¹⁰ According to 2 CFR 220, Appendix A, Section G.2; 2 CFR §200.68; and UPenn's NICRAs published from July 1, 2004, through June 30, 2017, any portion of a subaward that exceeds \$25,000 should be excluded from the indirect cost base.

¹¹ UPenn had budgeted the sampled laboratory services as subaward expenses rather than as consulting expenses. Therefore, it should have accounted for these costs under a subaward with (b) (4) University. As such, UPenn should have excluded any of the laboratory service expenses that exceeded \$25,000 from its indirect cost base.

¹² According to 2 CFR 220, Appendix A, Section G.7, and 2 CFR 200, Appendix III, Section C.7, when identifying and computing indirect costs at Institutions of Higher Education (IHEs), NSF must use the negotiated rates in effect at the time of the initial award throughout the life of the award. Therefore, NSF does not permit IHEs to adjust award levels during a grant's POP as a result of changes in the negotiated rates quoted in the applicable Federal guidance (see Part I, Chapter II, Section C.2.g.(viii) of NSF PAPPG 09-1).

Table 2. Inappropriate Application of Indirect Costs

Description	NSF Award No.	Fiscal Year	Questioned Costs
December 2014 Indirect Costs Applied to PSCs	(b) (4)	2015	\$3,075
May 2016 Indirect Costs Applied to PSCs	(b) (4)	2016	6,026
May 2015 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2015	1,451
August 2015 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2016	2,175
September 2015 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2016	1,500
January 2016 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2016	783
March 2016 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2016	1,510
June 2016 Indirect Costs Applied to a Fellowship Stipend	(b) (4)	2016	1,567
June 2015 Indirect Costs Applied to Equipment	(b) (4)	2015	5,715
March 2016 Indirect Costs Applied to Equipment	(b) (4)	2016	6,382
July 2016 Indirect Costs Applied to Equipment	(b) (4)	2017	4,107
December 2016 Indirect Costs Applied to Equipment	(b) (4)	2017	5,277
August 2016 Indirect Costs Applied to Consultant Costs	(b) (4)	2017	16,812
September 2014 Indirect Costs Applied at the Wrong Rate	(b) (4)	2015	95
Total Questioned Costs			<u>\$56,475</u>

Source: Auditor summary of questioned transactions.

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$56,475 in questioned costs and direct UPenn to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UPenn to strengthen the administrative and management controls and processes over applying indirect costs to Federal awards. Processes could include developing new policies and procedures that require UPenn to annually review all project accounts set up for NSF awards that include funding for PSCs, as well as for any other expenses that should be excluded from the MTDC base, to ensure that UPenn appropriately excludes these costs from the MTDC base.

University of Pennsylvania Response

- With regard to the indirect costs inappropriately applied to PSCs, UPenn agreed to refund NSF for the indirect costs associated with these transactions and noted that it will remind central and departmental administrators of the importance of complying with UPenn's procedures for identifying and separately accounting for PSCs on sponsored project funds. UPenn agreed that it had erroneously charged the indirect costs; therefore, it did not contest this finding.

- With regard to the indirect costs inappropriately applied to graduate student stipends, UPenn asserted that, although its Negotiated Indirect Cost Rate Agreements (NICRA) states that educational fellowships should be excluded from the MTDC base, the sampled transactions represent compensation paid to graduate students for work completed on sponsored projects, rather than educational fellowships as referenced in the NICRA. Further, UPenn noted that, because it included these payments in the Research and Other Sponsored Activities and Instruction MTDC base, it charged indirect costs appropriately and consistently in accordance with the NSF proposals and the indirect cost study for these payments. Therefore, UPenn disagreed with our recommendation that it refund NSF for the indirect costs associated with these payments.
- With regard to the indirect costs inappropriately applied to equipment expenses, UPenn agreed to refund NSF for the indirect costs associated with the precision laminator charged to NSF Award No. (b) (4), the replacement part for the laser charged to NSF Award No. (b) (4), and the server charged to NSF Award No. (b) (4). UPenn agreed that it should have accounted for these items as capital equipment and excluded the items from the application of indirect costs. UPenn further noted that it will continue to remind administrators of UPenn's capital equipment policies and procedures.

However, UPenn disagreed that it was inappropriate to account for the \$6,845 of expenses charged to NSF Award No. (b) (4) as materials and supplies, as the invoice detailed three separate items, each of which was below UPenn's capital purchasing threshold of \$5,000. As a result, UPenn asserted that it accounted for these items appropriately and that it charged indirect costs correctly, in accordance with its financial policies. Therefore, UPenn disagreed with our recommendation that it refund NSF for the indirect costs associated with this expense.

- With regard to the indirect costs inappropriately applied to consultant costs, UPenn agreed to refund NSF for the indirect costs associated with these transactions and noted that it would remind departmental staff of UPenn's policy related to accounting for and recording subaward expenses appropriately. Specifically, UPenn agreed that it should have accounted for the sampled lab services as subaward expenses and excluded them from the application of indirect costs. UPenn noted that the error occurred because of turnover in the departmental business office.
- With regard to the indirect costs inappropriately applied at the wrong rate, UPenn agreed to refund NSF for the excess indirect costs associated with this transaction and noted that the central office responsible for maintaining indirect cost schedules has implemented new procedures to ensure that it calculates indirect costs based on the transaction date of the direct cost and the rate in effect at the time of the award. Specifically, UPenn agreed that it incorrectly set up the award using the indirect rate included in the proposal instead of the rate in effect at the time of the award. Therefore, UPenn did not contest this finding.

Auditors' Additional Comments

Our position regarding this finding does not change. Specifically:

- With regard to the indirect costs inappropriately applied to PSCs, UPenn agreed to refund NSF for the indirect costs associated with these transactions; therefore, our position does not change.
- With regard to the indirect costs inappropriately applied to graduate student stipends, UPenn stated that the stipends did not represent educational fellowship payments; however, UPenn had provided letters of appointment to support three of the sampled stipend payments that specifically identified these payments as “living stipends.”¹³ Based on the letters that UPenn provided, these stipends were paid on a monthly basis, and did not depend on the student’s tuition cost or level of effort. Therefore, UPenn should have treated these transactions as fellowship expenses and should not have applied indirect costs.
- With regard to the indirect costs inappropriately applied to equipment expenses, UPenn stated that the materials charged to NSF Award No. (b) (4) consisted of three separate items that were each below the capital purchasing threshold; however, UPenn previously indicated that it had used these items to fabricate a robot. Since UPenn used the purchased items to assemble a single piece of capital equipment, it should have treated these materials as equipment and should not have applied indirect costs.
- With regard to the indirect costs inappropriately applied to consultant costs, UPenn agreed to refund NSF for the indirect costs associated with these transactions; therefore, our position does not change.
- With regard to the indirect costs inappropriately applied at the wrong rate, UPenn agreed to refund NSF for the excess indirect costs associated with this transaction; therefore, our position does not change.

Finding 3: Unallowable Expenses

UPenn charged \$50,360 of unallowable expenses to eight NSF awards, as follows:

- ***Unallowable Salary Expenses***¹⁴

UPenn inappropriately used the salary rate budgeted in the award proposal rather than the employee’s actual salary rate when calculating salary expenses charged to an NSF award. Specifically:

¹³ UPenn provided original offer letters to support stipend payments made for three of the six transactions that included student fellowship stipend expenses.

¹⁴ According to 2 CFR §200.430(i), salaries and wages charged to Federal awards must be based on records that accurately reflect the work performed.

- In December 2016, UPenn charged NSF Award No. (b) (4) for \$40,662 in direct and indirect salary expenses after providing a payment of \$19,370 to a post-doctoral employee the day before the employee terminated his or her employment at UPenn. Although UPenn had identified the post-doctoral employee as a participant on this award in the award's annual report, the amount of the payment was not based on the employee's actual effort or the salary appointment; instead, UPenn appears to have paid the employee based on the amount budgeted for their position over the course of the grant's 4-year POP.¹⁵ Because this payment appears to have been based on the funding available in the grant budget rather than on the employee's actual effort, all costs associated with this salary payment are unallowable.

- ***Unallowable Travel Expenses***

UPenn inappropriately charged unallowable travel expenses to four NSF awards. Specifically:

- *Unallowable Upgraded Airfare*¹⁶
 - In September 2016, UPenn charged NSF Award No. (b) (4) for \$3,306 in airfare expenses incurred to allow the PI to travel to (b) (6) to perform grant-related research. The trip appears to have benefitted the objectives of this award; however, the PI upgraded to business-class travel for the return airfare. Because UPenn was unable to provide documentation to support the allowability of the business-class flight, the portion of the airfare expenses associated with this flight, or \$319, is unallowable.¹⁷
 - In December 2016, UPenn charged NSF Award No. (b) (4) for \$3,864 in airfare expenses incurred to allow a graduate student to participate in a grant-related conference. The trip appears to have benefitted the objectives of this award; however, \$640 of the expense related to additional costs incurred for premium economy seating. Because UPenn did not specifically approve the premium economy airfare, the upgraded airfare expenses are unallowable.

¹⁵ The budget for NSF Award No. (b) (4) included \$19,370 to support 1 month of the post-doctoral employee's salary for each year of the grant's 4-year POP.

¹⁶ According to 2 CFR 220, Appendix A, Section J.53, and 2 CFR §200.474, airfare costs that exceed the cost of standard commercial airfare are unallowable unless the organization appropriately justifies and documents an authorized exception. Further, UPenn Financial Policy Manual, Policy 2354, *Travel and Entertainment Policy – Air Travel*, states that UPenn will not reimburse or allow business or first-class travel unless the travel has been approved by the head of the School or Center (or a designated representative).

¹⁷ The draft report that we provided to UPenn questioned all \$3,306 associated with the PI's airfare, as UPenn had not provided documentation to support the portion of the cost associated with the business-class airfare. Because UPenn's formal response included support demonstrating that only \$319 of the expense related to the business-class upgrade, we revised the questioned costs for this exception.

- *Unallowable Foreign-Air Carrier Airfare*¹⁸
 - In May 2014, UPenn charged NSF Award No. (b) (4) for \$58,811 in travel expenses based on the PI's request for a travel advance for a grant-related research trip to (b) (6). The trip appears to have benefitted the objectives of this award; however, the documentation that UPenn provided to support the actual use of the travel advance included airline receipts from (b) (6), a non-U.S. flag carrier. Because the PI was required to comply with the *Fly America Act* on two of the flights (b) (6) took for this trip (one from (b) (6) to (b) (6), and one from (b) (6) to (b) (6)), the portion of the travel expenses associated with these flights, or \$1,044, is unallowable.
- *Other Unallowable Travel*¹⁹
 - In December 2015, UPenn charged NSF Award No. (b) (4) for \$3,892 in travel expenses incurred to allow a graduate student to participate in a grant-related workshop. The general purpose of the trip appears to have benefitted the objectives of the award; however, 3 days of the trip do not appear to have had a business purpose. Because UPenn was unable to provide sufficient documentation to support a business purpose for the final 3 days of the trip, the portion of the travel expenses associated with those days, or \$575, is unallowable.
- *Unallowable Relocation Expenses*²⁰

UPenn inappropriately charged unallowable relocation expenses to an NSF award. Specifically:

- In September 2016, UPenn charged NSF Award No. (b) (4) for \$4,840 in relocation expenses incurred for a post-doctoral employee to move from (b) (6) to Pennsylvania. Because UPenn did not specifically request funding to support the employee's relocation expenses, did not include this funding in the award's budget, and did not identify the post-doctoral employee in the budget justification, all costs associated with the relocation are unallowable.

¹⁸ NSF PAPPG 14-1, Part II, Chapter VI, Section G.1.b.(i) and UPenn Financial Policy Manual, Policy 2354, *Travel and Entertainment Policy – Air Travel* state that travelers must comply with the *Fly America Act*, which requires travelers to use U.S. flag carriers if they are traveling on funds provided by the Federal Government.

¹⁹ UPenn Financial Policy Manual, Policy 2364, *Travel and Entertainment Policy – Non-Reimbursable Items* states that expenses related to personal days taken before, during, or after a business trip are non-reimbursable unless they reduce the total cost of the trip.

²⁰ NSF PAPPG 13-1, Part II, Chapter V, Section C.4.a.(i) states that organizations may charge relocation costs to an NSF grant provided that the proposal specifically indicates that the grantee intends to hire a named individual for full-time work on the project.

- **Unallowable Entertainment and Alcohol Related Expenses²¹**

UPenn inappropriately charged unallowable entertainment and alcohol-related expenses to two NSF awards. Specifically:

- In January 2015, UPenn charged NSF Award No. (b) (4) for \$2,190 in expenses related to an “(b) (4) Recruitment/End of Year Dinner.”²² The grant budget included \$2,990 for refreshments for (b) (4) meetings; however, the budget justification indicated that the funding would be used for \$115 of refreshments provided at approximately one meeting per week. In addition, this dinner appears to have been entertainment-related, based on the PI’s statement that the dinner was “an important contributor to creating a sociable and welcoming atmosphere.” As a result, all costs associated with the dinner are unallowable.
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$90 in unallowable alcohol-related expenses incurred for a grant-supported event.

UPenn does not have sufficient policies and procedures in place to ensure that it only charges allowable costs to NSF awards. As a result, UPenn inappropriately charged unallowable salary, travel, relocation, entertainment, and alcohol expenses to NSF awards. Therefore, we are questioning \$50,360 of unallowable expenses, as follows:

Table 3. Unallowable Expenses

Description	NSF Award No.	Fiscal Year	Questioned Costs
December 2016 Unallowable Salary Expense	(b) (4)	2017	\$40,662
September 2016 Unallowable Upgraded Airfare	(b) (4)	2017	319
December 2016 Unallowable Upgraded Airfare	(b) (4)	2017	640
May 2014 Unallowable Foreign Flag Carrier Airfare Expense	(b) (4)	2014	1,044
December 2015 Unallowable Travel Expense	(b) (4)	2016	575
September 2016 Unallowable Relocation Expense	(b) (4)	2017	4,840
January 2015 Unallowable Entertainment Expense	(b) (4)	2015	2,190
June 2016 Unallowable Alcohol Expense	(b) (4)	2016	90
Total Questioned Costs			<u>\$50,360</u>

Source: Auditor summary of questioned transactions.

²¹ According to 2 CFR §200.423, costs of alcoholic beverages are unallowable. Further, NSF PAPPG 10-1 and 15-1, Part I, Chapter II, Section C.2.g.(xii)(a) and (c) state that costs related to entertainment, diversion, social activities, and alcoholic beverages are unallowable.

²² The receipt that UPenn provided to support this expense was improperly scanned and only supported \$1,750 of the expenses.

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$50,360 in questioned costs and direct UPenn to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UPenn to strengthen the administrative and management procedures over allocating salary expenses to sponsored awards. Procedures could include reviewing salary expenses to ensure that employees are earning salary based on actual work performed.
3. Direct UPenn to strengthen the administrative and management procedures over allocating travel expenses to sponsored awards. Procedures could include:
 - a. reviewing all foreign airfare purchases for compliance with the *Fly America Act* before charging the expenses to federally sponsored awards;
 - b. performing periodic reviews of transactions involving airfare to ensure that PIs do not inappropriately charge sponsored awards for business-class or premium economy fares; and,
 - c. reviewing reimbursement requests to ensure that UPenn can support the business purpose for all travel days for which UPenn reimbursed expenses.
4. Direct UPenn to strengthen the administrative and management procedures over allocating relocation expenses to sponsored awards. Procedures could include requiring that personnel review relocation expenses before UPenn charges the expenses to a federally sponsored award.
5. Direct UPenn to strengthen the administrative and management procedures over allocating food and beverage expenses to sponsored awards. Procedures could include requiring that personnel review food and beverage expenses for unallowable alcohol charges before UPenn charges the expenses to a federally sponsored award.

University of Pennsylvania Response

- With regard to the \$40,662 in questioned salary expenses on NSF Award No. (b) (4), UPenn noted that it will implement a new human resource, payroll, and financial management platform in July 2019 that should strengthen administrative and management procedures over allocating salary expenses to sponsored awards. However, UPenn disagreed with our questioned costs. Although UPenn agreed that the payments were not timely, it asserted that these costs should be allowable because the PI confirmed that the post-doctoral fellow completed his work in support of the project before the fellow departed UPenn. In addition, the annual report identified that the fellow worked on the award, and the effort report was certified to reflect that the fellow spent time on the

NSF award. Therefore, UPenn disagreed with our recommendation that it refund NSF for all costs associated with this salary payment.

- With regard to the \$3,306 in questioned airfare expenses on NSF Award No. (b) (4), UPenn agreed to strengthen its controls for reviewing expense reimbursement requests and travel charges to ensure that it does not charge expenses for upgraded airfare to sponsored awards. However, UPenn disagreed that all costs associated with the flights to (b) (6) were unallowable. Specifically, UPenn noted that it agreed to repay the \$319 of additional costs incurred for the business-class upgrade; however, it disagreed with our questioning \$2,987 of the expense, as it was able to provide support demonstrating that this cost did not relate to the business-class upgrade.
- With regard to the \$640 in questioned airfare expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to strengthen its controls for reviewing expense reimbursement requests and travel charges to ensure that it does not charge unapproved expenses for upgraded airfare to sponsored awards. UPenn agreed that it should have obtained approval for the request to purchase premium economy seating before booking and reimbursing the student for the airfare; therefore it did not contest this finding.
- With regard to the \$1,044 in questioned airfare expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to remind staff of the *Fly America Act* requirements and the need to review foreign travel carefully for compliance before allocating the expense to sponsored awards. UPenn was unable to locate documentation to support an exception to the *Fly America Act* for the PI's travel; therefore, it did not contest this finding.
- With regard to the \$575 in questioned travel expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to strengthen its controls for reviewing expense reimbursement requests and travel charges to ensure compliance with its business travel and expense reimbursement policies. UPenn was unable to locate additional documentation or receipts to support the business nature of the additional travel days; therefore, it did not contest this finding.
- With regard to the \$4,840 in questioned relocation expenses on NSF Award No. (b) (4), UPenn noted that it will focus on strengthening departmental administrative procedures over allocating expenses to sponsored awards, including reviewing relocation expenses before charging the expenses to sponsored awards. However, UPenn disagreed with our questioned costs. UPenn asserted that the award budget specified a post-doctoral fellow "to be determined," and the award coincided with the finalized appointment of this fellow. UPenn also noted that the fellow relocated from (b) (6) to participate full-time on this project and dedicated all effort to this award. Although UPenn agreed that the budget did not include funding for relocation expenses and UPenn did not request approval for relocation expenses before charging the expense to the award, it disagreed with our recommendation that it refund NSF for all costs associated with this relocation expense.

- With regard to the \$2,190 in questioned entertainment expenses on NSF Award No. (b) (4) and \$90 in questioned alcohol expenses on NSF Award No. 1545212, UPenn agreed to refund NSF for all questioned costs and to enhance its procedures to require a review of food, beverage, and alcohol expenses before charging the expenses to sponsored awards. UPenn does not contest this finding.

Auditors' Additional Comments

We determined that UPenn provided sufficient documentation to support that the cost of the business-class upgrade charged to NSF Award No. (b) (4) was \$319. We therefore removed \$2,987 from the questioned costs included in the draft report. However, our position regarding the remainder of the questioned costs does not change. Specifically:

- With regard to the \$40,662 in questioned salary expenses on NSF Award No. (b) (4), UPenn was unable to provide either a formal agreement to support the amount of this expense or documentation supporting that UPenn had appropriately based the amount charged on the employee's salary agreement. UPenn should not have charged this expense to the award.
- With regard to the \$640 in questioned airfare expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$1,044 in questioned airfare expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$575 in questioned travel expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.
- With regard to the \$4,840 in questioned relocation expenses on NSF Award No. (b) (4), UPenn stated that the post-doctoral fellow's position was included in the proposal and that UPenn had hired the fellow specifically to perform work on this award. However, the fellow was not named on the award, and UPenn did not request NSF's approval before charging his relocation expenses to the award. Therefore, these expenses are not allowable under NSF's *Proposal and Award Policies and Procedures Guides* (PAPPG).
- With regard to the \$2,190 in questioned entertainment expenses on NSF Award No. (b) (4) and the \$90 in questioned alcohol expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs; therefore, our position does not change.

Finding 4: Expenses Not Appropriately Allocated to NSF Awards

UPenn did not allocate expenses to NSF awards based on the relative benefits received by the awards, as required by Federal policies.²³ Specifically, UPenn inappropriately allocated \$8,853 in expenses to three NSF awards, as follows:

- In March 2014, 2 months after NSF Award No. (b) (4) expired, UPenn charged the award for \$6,466 in expenses related to a graduate student's Fall 2013 and Spring 2014 tuition. The award budget included funding to support graduate students; however, the tuition does not appear to be allocable to this award, as the student certified that 100 percent of his or her effort was allocable to a different sponsored award and UPenn did not identify the student as a participant on this award in the award's annual report. In addition, we noted that the student incurred the majority of his or her Spring 2014 tuition expense after the award's POP expired. Because the tuition expenses do not appear to have benefitted this NSF award, UPenn should not have allocated the expenses to the award.
- In December 2015, UPenn charged NSF Award No. (b) (4) for \$2,285 in travel expenses that the PI incurred to travel to (b) (6) to visit a colleague. As a result of our audit, the PI determined that this trip did not benefit this NSF award. Therefore, UPenn should not have charged these expenses to the award.
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$102 in change fees that the PI incurred to leave a grant-related conference early to attend a non-grant-related meeting in (b) (6). Because the change fee does not appear to have benefitted the NSF award charged, UPenn should not have allocated this expense to the award.

UPenn does not have proper controls in place to ensure that it always allocates costs to sponsored awards based on the relative benefits received by the awards. As a result, UPenn charged NSF awards for expenses that were not reasonable, appropriate, or allocable to the awards. Therefore, we are questioning \$8,853 of inappropriately allocated expenses, as follows:

Table 4. Expenses Not Appropriately Allocated to NSF Awards

Description	NSF Award No.	Fiscal Year	Questioned Costs
March 2014 Unallocable Tuition Expense	(b) (4)	2014	\$6,466
December 2015 Unallocable Travel Expense	(b) (4)	2016	2,285
June 2016 Unallocable Travel Expense	(b) (4)	2016	102
Total Questioned Costs			<u>\$8,853</u>

Source: Auditor summary of questioned transactions.

²³ According to 2 CFR 220, Appendix A, Section C.4, a cost should be allocated to a particular cost objective in accordance with the relative benefits received.

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$8,853 in questioned costs and direct UPenn to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UPenn to strengthen the administrative and management controls and processes over allocating expenses to sponsored funding sources. Processes could include requiring PIs or other designated staff to document the allocation methodology used to charge expenses to sponsored awards, including a detailed justification for determining the appropriate allocation methodology.

University of Pennsylvania Response

UPenn did not contest this finding.

- With regard to the \$6,466 in questioned tuition expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to enhance the administrative and management controls surrounding the allocation of expenses to sponsored awards. UPenn also stated that it will disseminate a memorandum to faculty and designated staff providing instructions on how to properly justify and document the allocation methodology for expenses on sponsored awards.
- With regard to the \$2,285 in questioned travel expenses on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and noted that it will focus on ensuring timely identification and transfer of unallocable costs. UPenn agreed that it had not removed the charge in question from the grant in a timely manner and noted that staff turnover in the department's regional business office contributed to this oversight.
- With regard to the \$102 in questioned change fees on NSF Award No. (b) (4), UPenn agreed to refund NSF for all questioned costs and to strengthen the administrative and management controls and processes over allocating travel expenses to sponsored project awards.

Auditors' Additional Comments

Our position regarding this finding does not change.

Finding 5: Incorrect Application of Fringe Benefits

UPenn incorrectly applied \$504 of fringe benefits to salary expenses incurred during the audit period, as follows:²⁴

²⁴ According to 2 CFR 220, Appendix A, Section C.4 and 2 CFR §200.405, a cost is allocable to a particular cost objective if the goods or services involved are chargeable or assignable to that cost objective in accordance with the relative benefits received.

- In August 2014, UPenn charged NSF Award No. (b) (4) for \$146 in fringe benefit expenses that UPenn had inappropriately applied to salary costs. UPenn incorrectly applied these fringe benefits at the rate in effect at the time of the transaction (i.e., 32 percent), rather than at the rate in effect at the time UPenn paid the original salary (i.e., 31.8 percent).
- In September 2016, UPenn removed salary costs from NSF Award No. (b) (4); however, it did not appropriately remove \$336 of the fringe benefit expenses it had applied to those salary costs. UPenn incorrectly removed the fringe benefits at the rate in effect at the time of the transaction (i.e., 31.2 percent), rather than at the rate in effect at the time UPenn paid the original salary and charged it to the award (i.e., 32.2 percent).
- In November 2016, UPenn removed salary costs from NSF Award No. (b) (4); however, it did not appropriately remove \$22 of the fringe benefit expenses it had applied to those salary costs. UPenn incorrectly removed the fringe benefits at the rate in effect at the time of the transaction (i.e., 31.2 percent), rather than at the rate in effect at the time UPenn paid the original salary and charged it to the award (i.e., 32.2 percent).

UPenn's accounting system is set up to apply and remove fringe benefits based on the current effective NICRA rate, rather than the rate applicable when UPenn initially incurred the salary expense.²⁵ As a result, UPenn did not correctly apply fringe benefits to salary costs transferred when the fiscal year of the transfer differed from the fiscal year in which UPenn incurred the original salary expense. Therefore, we are questioning \$504 of overcharged fringe benefits, as follows:

Table 5. Incorrect Application of Fringe Benefits

Description	NSF Award No.	Fiscal Year	Questioned Costs
August 2014 Fringe Benefits Overcharged	(b) (4)	2015	\$146
September 2016 Fringe Benefits Not Completely Removed	(b) (4)	2017	336
November 2016 Fringe Benefits Not Completely Removed	(b) (4)	2017	22
Total Questioned Costs			<u>\$504</u>

Source: Auditor summary of questioned transactions.

²⁵ According to UPenn's NICRAs, the following fringe benefit rates applied to the sampled payroll expenses:

- 7/1/2013 to 6/30/2014: 31.8% for Full Time Employees
- 7/1/2014 to 6/30/2015: 32.0% for Full Time Employees
- 7/1/2015 to 6/30/2016: 32.2% for Full Time Employees
- 7/1/2016 to 6/30/2017: 31.2% for Full Time Employees

Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Resolve the \$504 in questioned costs and direct UPenn to repay or otherwise remove the sustained questioned costs from its NSF awards.
2. Direct UPenn to update its accounting system to ensure that it correctly applies and removes fringe benefits as part of salary cost transfers.

University of Pennsylvania Response

UPenn did not contest this finding and agreed to refund NSF for all costs associated with the inappropriately applied employee benefit expenses at the conclusion of the audit. UPenn also agreed with our recommendation to ensure that it applies and refunds employee benefits at the rate in effect at the time it incurs the expense. UPenn stated that it will revisit its closeout procedures to ensure that it performs reconciliations for employee benefit rates based on salary cost for the fiscal year in which it originally incurred the salary expense.

Auditors' Additional Comments

Our position regarding this finding does not change.

Finding 6: Improperly Approved Subaward Payments

UPenn inappropriately charged subaward payments to four NSF awards, as follows:

- ***Unsupported Invoice Approvals***²⁶

UPenn was unable to provide support demonstrating that it had appropriately reviewed and approved five sampled subawardee invoices before paying the invoices. Specifically:

- In November 2014, UPenn charged NSF Award No. (b) (4) for \$26,832 related to a subaward payment to (b) (4) University.
- In May 2015, UPenn charged NSF Award No. (b) (4) for \$1,042 related to a subaward payment to (b) (4) University.
- In June 2015, UPenn charged NSF Award No. (b) (4) for \$2,728 related to a subaward payment to (b) (4) University.
- In August 2015, UPenn charged NSF Award No. (b) (4) for \$2,728 related to a subaward payment to (b) (4) University.

²⁶ UPenn's Financial Policy Manual 2131 requires that PIs review and approve all subawardee invoices.

- In June 2016, UPenn charged NSF Award No. (b) (4) for \$37,271 related to a subaward payment to the Research (b) (4) for the (b) (4).
- **Expired Subaward Payment²⁷**

UPenn inappropriately paid an invoice related to an expired subaward. Specifically:

- In November 2015, UPenn charged NSF Award No. (b) (4) for \$21,155 related to a subaward payment to the (b) (4) for work performed from July 2015 through September 2015. The (b) (4) performed the invoiced services during the NSF award's POP; however, the POP for UPenn's subaward agreement with the (b) (4) ended in September 2014. Because the work performed appears to have been within the scope of the original award and UPenn incurred the expenses during the NSF award's POP, we are not questioning any costs associated with this invoice. However, we are noting a compliance exception.

UPenn does not have sufficient policies and procedures in place to ensure that the PI appropriately documents his or her approval of subawardee invoices or that UPenn has verified that a subaward's POP is active before paying invoices related to the subaward. These issues do not result in any questioned costs; however, we noted them as instances of non-compliance with Federal regulations and UPenn's internal subaward policies.

Table 6. Improperly Approved Subaward Payments

NSF Award No.	Compliance Issue Identified
(b) (4)	Failure to Document PI's Approval of Subaward Invoice
(b) (4)	Failure to Document PI's Approval of Subaward Invoice
(b) (4)	Failure to Document PI's Approval of Subaward Invoice
(b) (4)	Failure to Document PI's Approval of Subaward Invoice
(b) (4)	Failure to Document PI's Approval of Subaward Invoice
(b) (4)	Failure to Document Extension of Subaward POP

Source: Auditor summary of identified instances of non-compliance.

Recommendation

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Direct UPenn to strengthen the administrative and management procedures over the review and approval of subaward expenses charged to sponsored awards. Procedures could include:

²⁷ According to NSF PAPPG 11-1, Part II, Chapter II, Section A.1.a., grantees should monitor the performance of projects supported by NSF grants to ensure that performance adheres to time schedules that are appropriate to the project or terms of the grant.

- a. requiring periodic training for PIs and other employees involved in charging subaward expenses to Federal awards, and,
- b. implementing checks to ensure that the PI properly documented his or her approval of subaward invoices and that UPenn verified that the subaward's POP is active before paying each subaward invoice.

University of Pennsylvania Response

UPenn did not contest this finding. UPenn stated that it will remind administrators of the importance of complying with UPenn policies related to subrecipient activities and it will implement periodic reviews to ensure that PIs properly document approval of subaward invoices before paying the invoices and throughout the life of the subaward.

- With regard to subaward invoice approvals, UPenn agreed to strengthen administrative and management controls over reviewing and approving subaward expenses charged to sponsored research awards. UPenn agreed to continue requiring periodic training for departments involved in managing subaward expenses on sponsored awards.
- With regard to the expired subaward payment, UPenn agreed with our recommendation to strengthen administrative and management controls related to subawards. UPenn stated that it had not appropriately documented the subaward to the (b) (4) due to an oversight.

Auditors' Additional Comments

Our position regarding this finding does not change.

Finding 7: Incorrect Application of Proposed Indirect Cost Rates

UPenn applied incorrect indirect cost rates to direct expenses accumulated on seven NSF awards. For each of these awards, UPenn applied the NICRA rate that was in effect at the time it submitted the grant proposal, rather than the rate that was in effect as of the effective date of the NSF award. As a result, UPenn applied indirect costs at a rate that was lower than was the approved NICRA rate as of the effective date of the award.

According to 2 CFR 220, Appendix A, Section G.7, and 2 CFR 200, Appendix III, Section C.7, when identifying and computing indirect costs at Institutions of Higher Education (IHEs), NSF must use the negotiated rates in effect at the time of the initial award throughout the life of the award. Accordingly, per NSF's PAPPG, NSF does not permit IHEs to adjust award levels during a grant's POP as a result of changes in the negotiated rates quoted in the applicable Federal guidance.²⁸

UPenn did not have sufficient policies and procedures in place to ensure that it calculated indirect costs using the NICRA rates in effect at the time of the initial award, rather than the rates

²⁸ See Part I, Chapter II, Section C.2.g.(viii) of NSF PAPPGs 09-1, 15-1, and 16-1.

in effect at the time UPenn submitted its grant proposal or received the grant award. As a result, UPenn applied inappropriate indirect cost rates to direct expenses accumulated on the awards shown in the table below.

Table 7. Incorrect Application of Proposed Indirect Cost Rates

NSF Award No.	Award Effective Date	Appropriate Rate	Rate Applied
(b) (4)	09/01/2009	59.00%	57.50%
(b) (4)	07/15/2009	59.00%	57.50%
(b) (4)	07/01/2009	59.00%	57.50%
(b) (4)	09/01/2009	59.00%	57.50%
(b) (4)	09/15/2016	61.00%	60.00%
(b) (4)	11/01/2015	11.11%	10.00%
(b) (4)	07/01/2016	61.00%	60.00%

Source: Auditor summary of identified instances of non-compliance.

This issue did not result in any questioned costs; however, without policies and procedures in place to ensure that UPenn uses the correct indirect cost rate, it is possible that UPenn may overcharge sponsoring organizations for indirect costs in the future. Therefore, we are noting a compliance exception.

Recommendation

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Direct UPenn to strengthen the administrative and management controls and processes over establishing indirect cost rates for Federal awards to ensure that it applies costs at the rates in effect at the time of the initial award.

University of Pennsylvania Response

UPenn did not contest this finding. UPenn stated that it will continue to focus on improving its administrative and management controls over establishing indirect cost rates to ensure that it charges appropriate costs based on the rates in effect at the time it incurs the original expense. UPenn further noted that it implemented the Oracle Grants Management System (GMS) in April 2014, which has provided increased control over calculating indirect costs for sponsored programs. UPenn stated that GMS allows it to create indirect cost burdening schedules using different rates based on the transaction date of the direct cost, which helps ensure rates are calculated correctly based on when costs are incurred.

Auditors' Additional Comments

Our position regarding this finding does not change.

Finding 8: Non-Compliance with UPenn Travel Policies

UPenn did not comply with its own internal policies and procedures when incurring travel costs on NSF awards, as follows:

- ***Failure to Document Constructive Airfare Costs***²⁹

We identified one instance in which UPenn allowed a traveler to combine personal travel with business-related travel but did not properly obtain or document the constructive airfare cost associated with the business portion of the trip to verify that the personal travel expenses did not increase the costs charged to NSF awards. Specifically, in July 2016, the PI for NSF Award No. (b) (4) traveled from (b) (6), to (b) (6) for a conference. On the way back, the PI spent 2 extra days on a layover in (b) (6) for personal travel. UPenn stated that there were no direct flights from (b) (6) to (b) (6) but did not maintain documentation that taking a return flight through (b) (6) 2 days after the conference ended did not increase the airfare costs incurred. Because the costs appear reasonable and UPenn maintains that it verified the costs at the time the PI purchased the tickets, we are only noting a compliance exception.

- ***Failure to Document Reconciliation of Travel Advances***³⁰

We identified two instances in which UPenn employees did not appropriately reconcile or account for a travel advance within 120 days of returning from a trip. Specifically:

- In February 2014, UPenn charged NSF Award No. (b) (4) for a \$15,550 travel advance to the PI for anticipated field research expenses in (b) (6). UPenn provided receipts documenting that the PI incurred more than \$15,550 in expenses to support the actual use of the travel advance; however, UPenn was unable to provide support demonstrating that the PI had appropriately reconciled or accounted for the travel advance within 120 days of completing the trip, as required by UPenn policy.
- In April 2014, UPenn charged NSF Award No. (b) (4) for a \$58,000 travel advance to the PI for anticipated field research expenses in (b) (6). UPenn provided receipts demonstrating that the PI incurred more than \$58,000 in expenses to support the actual use of the travel advance; however, UPenn was unable to provide support demonstrating that the PI had appropriately reconciled or accounted for the travel advance within 120 days of completing the trip, as required by UPenn policy.

Because the costs charged appear to be reasonable, we are only noting a compliance exception.

²⁹ UPenn Sponsored Projects Handbook 8.3.4.3 states that personnel may not charge personal side-trips to a sponsored project account.

³⁰ UPenn's Travel & Entertainment Policy 2369 states that failure to account for a travel advance and return any excess funds within 120 days will result in disciplinary or collection action.

UPenn does not have sufficient policies or procedures in place to ensure that it consistently complies with its internal policies and procedures. Therefore, we are noting three instances of non-compliance with UPenn policy, as follows:

Table 8. Non-Compliance with UPenn Travel Policies

NSF Award No.	Compliance Issue Identified
(b) (4)	Failure to Document Constructive Airfare Costs
(b) (4)	Failure to Document Travel Advance Reconciliation
(b) (4)	Failure to Document Travel Advance Reconciliation

Source: Auditor summary of identified instances of non-compliance.

Recommendation

We recommend that NSF's Director of the Division of Institution and Award Support:

1. Direct UPenn to strengthen the administrative and management procedures over travel on sponsored awards. Procedures could include:
 - a. requiring periodic training for PIs and other personnel responsible for booking travel on sponsored awards, and,
 - b. requiring award participants to provide constructive airfare for all travel requests that include personal travel and reviewing the constructive airfare to ensure that UPenn only charges sponsored awards for costs associated with the business purpose of the award.

University of Pennsylvania Response

UPenn did not contest this finding. Specifically:

- With regard to constructive airfare costs, UPenn agreed with our recommendation to strengthen administrative and management procedures over travel on sponsored awards. UPenn stated that it will remind faculty and staff of both UPenn policies and procedures related to personal trips during business travel and departmental internal processes for school-level review and approval for air travel on sponsored awards.
- With regard to travel advances, UPenn noted that it has transitioned from a paper-based process to an electronic system for all travel advances and reconciliations, which enables it to ensure that it reconciles advances and retains electronic records in accordance with its record retention policies. UPenn further stated that it will remind faculty and staff of the importance of complying with UPenn travel policies and procedures and will continue to strengthen the administrative and management procedures around timely reconciliation of travel advances on sponsored awards.

Auditors' Additional Comments

Our position regarding this finding does not change.

COTTON & COMPANY LLP

(b) (6)

Michael W. Gillespie, CPA, CFE
Partner

APPENDIX A: SCHEDULE OF QUESTIONED COSTS BY FINDING

NATIONAL SCIENCE FOUNDATION
ORDER # D16PB00552
PERFORMANCE AUDIT OF COSTS CLAIMED ON NSF AWARDS
UNIVERSITY OF PENNSYLVANIA

SCHEDULE OF QUESTIONED COSTS BY FINDING

Finding	Description	Questioned Costs		Total
		Unsupported	Unallowable	
1	Unsupported Expenses	\$149,765	\$0	\$149,765
2	Inappropriate Application of Indirect Costs	0	56,475	56,475
3	Unallowable Expenses	0	50,360	50,360
4	Expenses Not Appropriately Allocated to NSF Awards	0	8,853	8,853
5	Incorrect Application of Fringe Benefits	0	504	504
6	Improperly Approved Subaward Payments	0	0	0
7	Incorrect Application of Proposed Indirect Cost Rates	0	0	0
8	Non-Compliance with UPenn Travel Policies	<u>0</u>	<u>0</u>	<u>0</u>
Total		<u>\$149,765</u>	<u>\$116,192</u>	<u>\$265,957</u>

APPENDIX B: UNIVERSITY OF PENNSYLVANIA RESPONSE



Office of Research Services

April 18, 2019

Cotton and Company, LLP
635 Slaters Lane
4th Floor
Alexandria, VA 22314

RE: Response to Draft Audit of Cost Incurred for National Science Foundation (NSF)

Dear Sir or Madam:

The University of Pennsylvania (UPenn) is writing in response to the draft audit report to the National Science Foundation Office of the Inspector General (NSF-OIG) Performance Audit of Incurred Costs encompassing \$117 million in expenses claimed on 467 NSF awards for the period of performance of March 1, 2014 through February 28, 2017.

UPenn continues to educate central and departmental grants administrators on the importance of complying with NSF and UPenn policies and procedures through our Shared Research Governance Board, formal meetings with departments, and listserv announcements, as well as via training on the conduct of sponsored programs, including a specific, 4 hour in-person module dedicated to the management of an NSF award. UPenn is committed to improving compliance with NSF policy and award requirements.

Summary

The University of Pennsylvania is pleased to learn that there were no financial findings reported for \$117 million in expenses claimed on NSF awards during the audit period of performance (POP), March 1, 2014, through February 28, 2017. UPenn reviewed each compliance finding and determined that we concur with all compliance-related findings and corrective actions recommendations. UPenn does not, however, concur with all questioned costs and findings noted in the audit report.

UPenn concurs with \$60,219.00 of the \$268,944 in findings and questioned costs. UPenn believes the remaining \$208,725 in questioned costs are reasonable, allowable and allocable under OMB A-21 and the Code of Federal Regulations (2 CFR Part 220), NSF policies and the terms and conditions of the awards. Our responses to the individual findings are below:

Finding 1: Unsupported Expenses

UPenn was unable to provide adequate documentation to support the allocability, allowability, and reasonableness of \$149,765 of expenses charged to NSF awards during the audit period as required relevant Federal policies. Specifically:

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Tel 215.898.7293 Fax 215.898.9708 pennaors@lists.upenn.edu www.upenn.edu/researchservices/

- o In June 2014, UPenn charged NSF Award No. (b) (4) for \$30,000 in participant support costs (PSCs) related to an invoice from the (b) (4) (b) (4) that requested a lump-sum payment for “(b) (4) 14 STUDENT GRANTS” without including detailed support for the actual expenses incurred. NSF Award No. (b) (4) provided UPenn with travel funds to support student participation in the (b) (4) Workshop (b) (4); however, UPenn’s budget justification specifically stated that UPenn would reimburse awardees for actual travel expenses incurred and would not provide an unsupported lump-sum reimbursement. Despite this statement, UPenn provided the entire \$30,000 budget for this award as a lump-sum reimbursement to (b) (4) and was unable to provide detailed support for the actual expenses incurred. As such, we were unable to verify that UPenn used the funds to reimburse actual, reasonable, and allowable expenses. We are therefore questioning all costs associated with this invoice.

UPenn Response:

UPenn agrees that one payment was provided to the (b) (4) for UPenn’s share of expenses related to the (b) (4) Workshop (b) (4) and the invoice did not include detailed line item expenses; however, we disagree that the costs are not allocable, allowable and reasonable. The invoice was based on the activities included in the SOW and budget justification including the names of participants, the reason for the travel and costs associated with the participants’ travel. UPenn does not agree with the recommendation to refund the NSF all participant support costs related to the workshop funded by the NSF.

- o In June 2014, UPenn charged NSF Award No. (b) (4) for \$22,892 to reimburse the University of (b) (4) (b) (4) for two-thirds of the costs that (b) (4) (b) (4) incurred to host an award-related summer school program. The majority of the expenses included on (b) (4) invoice appear to be reasonable; however, the invoice included \$9,524 for one dinner at a price of \$122 per conference participant, which is significantly greater than the \$23 dinner per diem allowable for (b) (4) (b) (4). We requested that UPenn provide documentation to support that the meal costs actually incurred were reasonable, allowable, and allocable; however, UPenn was unable to do so. Because we were unable to verify that UPenn used these funds to reimburse actual, reasonable, and allowable expenses, we are questioning all costs associated with this dinner.

UPenn Response:

UPenn disagrees that the cost of the dinner for the (b) (4) summer school related awards luncheon was unreasonable and therefore all costs are questionable. The NSF pre-allocated this award to different sites. As lead, UPenn was responsible for forming the management structure and working with ten other Universities in the consortium. (b) (4) was responsible for the annual workshop conference. UPenn and (b) (4) agreed that (b) (4) would cover one-third of the cost. UC Berkeley presented UPenn with a detailed, 15 line invoice that outlined the cost to all participants and requested payment for two thirds of the invoice. UPenn also does not agree that the cost of the dinner was unreasonable based on a standard rate of \$23 per diem for dinner in (b) (4) considering that the cost included items such as space, AV rental, and

other surcharges that are customarily added into the price for meals at conferences. We do not agree with the recommendation to refund all costs associated with this activity which was included in the SOW and funded by the NSF. As recommended, UPenn will continue to strengthen administrative and management controls over obtaining and maintaining sufficient documentation by providing periodic training to staff responsible for reconciling and processing expenses charged to federal awards.

- o In August 2014, UPenn charged NSF Award No. (b) (4) for \$1,739 in printing expenses related to "Flyers/Brochures/Menus." The award budget did not contain funding to support publication expenses, and UPenn was unable to support how this expense benefitted the award. Because we were unable to verify that UPenn used these funds to reimburse actual, reasonable, and allowable expenses, we are questioning all costs associated with the publication expenses.

UPenn Response:

UPenn was not required to request prior approval to incur this expense and we believe that the expense was originally incurred in support of the project at the time. However, since we were unable to locate the documentation to further demonstrate how the expense benefitted the project, UPenn does not contest this finding. UPenn will continue to strengthen administrative and management controls over obtaining and maintaining sufficient documentation by providing periodic training to staff responsible for reconciling and processing expenses charged to federal awards. UPenn will refund all costs associated with the publication expense to the NSF at the conclusion of the audit.

- o In December 2014 and in February 2016, UPenn charged \$32,000 and \$48,000, respectively, to NSF Award No. (b) (4) for payments made to the (b) (4) (b) (4) for consulting services rendered by the company's (b) (6) a UPenn employee who served as a co-Principal Investigator (Co-PI) on this award. UPenn identified the Co-PI as an UPenn employee who participated on this award in the annual reports submitted to NSF; however, UPenn appears to have paid this employee for the services (b) (6) provided as an independent consultant for a Corporation. As UPenn did not enter into a consulting agreement with the Corporation to allow the co-PI to provide grant-related services, we were unable to verify the scope of the work performed, when the employee performed the work, or how UPenn determined the amount paid to be reasonable or allowable. We are therefore questioning all costs associated with the consulting services. Further, we noted that according to UPenn's procurement policies, UPenn employees are required to be paid through the payroll system and therefore cannot be paid as independent contractors.

UPenn Response:

UPenn does not agree that the scope of work, grant related services and determination of when the services were performed could not be verified. The individual was a part-time adjunct faculty member of UPenn's School of (b) (6) who was listed under "Senior Personnel" (as opposed to Co-PI) on this School of (b) (6) award. The PI approved the payment of the Corporation's invoices on the basis of the completion of the work, the scope

of which is described in the proposal. UPenn acknowledges the possible error of administrators not paying the individual through payroll during periods when (b) (6) was, in fact, on UPenn's payroll on a part-time basis, because they perceived that (b) (6) was, in fact, performing services not as part of (b) (6) UPenn teaching duties.

UPenn strengthened controls around the Independent Contractor and limited engagement process in FY18. The changes specifically address requirements for executing PO's, agreements and managing the invoice receipt and payment process. UPenn will continue to emphasize training and expectations for complying with UPenn policies and procedures for managing payments to consultants. UPenn will continue to emphasize the importance of verifying that invoices for services performed are processed timely and appropriately. UPenn does not agree with the recommendation to refund NSF all costs associated with the services.

- o In June 2015, UPenn charged NSF Award No. (b) (4) for \$2,328 in transcription services provided by (b) (4). UPenn had budgeted funding for transcription services; however, UPenn did not enter into a consulting agreement for these services. As a result, we were unable to verify the scope of the work performed, when the consultant performed the work, or how UPenn determined the amount paid to be reasonable or allowable. We are therefore questioning all costs associated with the consulting expense.

UPenn Response:

UPenn disagrees that the scope of work could not be verified. UPenn also disagrees that the time when the consultant performed the work and the reasonableness and allowability of the amount paid could not be verified. Therefore, UPenn disagrees that the amount paid should be disallowed and refunded to the NSF. Transcription costs were included in the SOW and budget justification. UPenn paid the transcriptionist the going rate at the time the work was performed (*see attached invoices for services performed by the transcriber on other awards*). Payment to the transcriber was processed in accordance with University policies and procedures at the time. UPenn implemented new independent contractor and limited engagement financial policies and procedures in FY18. The changes specifically address requirements for executing PO's, agreements and managing the invoice receipt and payment processes. UPenn will continue to emphasize training and expectations for complying with UPenn policies and procedures for managing payments to consultants.

- o In July 2015, UPenn charged NSF Award No. (b) (4) for \$760 in overtime pay provided to a graduate student. The grant's budget included funding to support graduate students; however, UPenn was unable to provide a timesheet to support the number of overtime hours charged to the NSF award. As a result, we were unable to verify the allowability of these expenses. We are therefore questioning all costs associated with the overtime expenses.

UPenn Response:

UPenn does not contest this finding. The graduate student was supported on this grant; however, the department was unable to locate the timesheet to support the overtime hours associated with

this transaction. Effective July 1, 2019, UPenn will implement Workday for Human Capital Management. We believe the new human resource, payroll and financial management platform will strengthen administrative and management procedures over allocating salary expense to sponsored awards and reduce the risks associated with late payments on sponsored awards. This will also help ensure appropriate controls are in place to track employee hours worked and paid are maintained in the system of record. As recommended, UPenn will refund the NSF for all costs associated with the overtime expense at the conclusion of the audit.

- In October 2015, UPenn charged NSF Award No. (b) (4) for \$1,428 in materials purchased in the final month of the award. The Principal Investigator (PI) stated that the purchase was necessary to complete work on the grant; however, UPenn was unable to produce adequate documentation to support the sampled expense. As a result, we were unable to verify the allowability of the materials purchased. We are therefore questioning all costs associated with the materials expense.

UPenn Response:

UPenn does not contest this finding. We agree that the order was placed in the final month of the award; however, we disagree that there was not ample time remaining for the equipment items to be utilized in the actual conduct of the research. The Principal Investigator utilized the materials and supplies purchased in the conduct of research to complete the research aims. UPenn will refund all costs associated with the material and supply expense.

- In December 2015, UPenn charged NSF Award No. (b) (4) for \$2,606 in travel expenses for round-trip airfare to (b) (6) to enable a graduate student to attend a grant-related workshop. The student's attendance at the workshop appears to be related to the scope of the award; however, the receipt that UPenn provided to support the airfare expense did not identify the traveler, the airline, or the airfare class purchased. As a result, we were unable to verify the allowability of the purchased airfare. We are therefore questioning all costs associated with the graduate student's airfare.

UPenn Response:

UPenn disagrees with that there was inadequate documentation to support allowability of this cost. UPenn presented the travel reimbursement expense report which provided an accounting of all activities related to the workshop. The documentation for the airfare expense was an Orbitz Cost and Billing Summary that showed the purchase of airfare. The total cost of the airfare to (b) (6) was reasonable at the time of travel. There was no substantive reason or University policy reason to refuse this student's reimbursement based on the documentation presented. UPenn was unable to retrieve the original Orbitz payment details requested, however, we do not agree that all costs associated with the airfare should be refunded to the NSF.

UPenn will remind faculty and staff of the importance of complying with UPenn travel policies and procedures and encourage refresher training for existing faculty and staff. Emphasis will be placed on ensuring adequate supporting documentation is uploaded into the University's Travel and Expense Management (TEM) system (Concur) and maintained in accordance with UPenn's Records Retention Policy.

- In June 2016, UPenn charged NSF Award No. (b) (4) for \$836 in registration fees that the PI incurred to attend a grant-related conference. The PI's attendance at the conference appears to be related to the scope of the award; however, UPenn was unable to provide invoices to support the conference registration fees. As a result, we were unable to verify the allowability of these expenses. We are therefore questioning all costs associated with the conference registration fees.

UPenn Response:

UPenn does not contest this finding. UPenn was unable to locate the invoice to support the conference registration fee. UPenn will remind faculty and staff of the importance of complying with UPenn travel policies and procedures and encourage refresher training to existing faculty and staff. Emphasis will be placed on ensuring adequate supporting documentation is uploaded into the University's Travel and Expense Management (TEM) system (Concur) and maintained in accordance with UPenn's Records Retention Policy. As recommended, UPenn will refund the NSF for all costs associated with this expense at the conclusion of the audit.

In September 2016, UPenn charged NSF Award No. (b) (4) for \$20,544 in professional service expenses because the Staff Director of UPenn's (b) (6) (b) (6) requested that UPenn pay the "sum of unpaid invoices to (b) (6) (for services to (b) (6) prior to August 1, 2016." UPenn provided documentation to support this individual's hourly contractor appointment at QNF; however, when we requested copies of the "unpaid invoices," UPenn stated that the payment amount "encompassed charges that were payable but had not been invoiced." Because UPenn was unable to support the sampled payment through invoices or timesheets, we were unable to verify the scope of the work performed, when the contractor performed the work, or how UPenn determined that the amount paid was reasonable or allowable. We are therefore questioning all costs associated with the consulting expense.

UPenn Response:

UPenn does not agree that we were unable to provide support for the sampled payment. The Principal Investigator confirmed the work performed based on the SOW and approved payment. UPenn implemented new independent contractor and limited engagement financial policies and procedures in FY18. The policies specifically address requirements for executing PO's, agreements and managing the invoice receipt and payment process. We believe the changes will mitigate the risk of payments being disbursed without invoices and supporting documentation. Additionally, UPenn faculty and staff will be reminded of the importance of complying with UPenn policies and procedures for managing payments to Independent Contractors as well as sponsored project documentation and record retention policies and procedures. UPenn does not agree with the recommendation to repay the NSF for all costs associated with the consulting expense.

Finding 2: Inappropriate Application of Indirect Costs

UPenn inappropriately applied indirect costs to expenses that it should have excluded from its indirect cost base and, as a result, UPenn charged NSF for \$56,475 in unallowable indirect costs. Specifically:

- ***Indirect Costs Inappropriately Applied to PSCs***

UPenn did not appropriately account for costs incurred to host conference and workshop participants as PSCs, in accordance with its NSF award budgets. As a result, UPenn inappropriately charged indirect costs to two NSF awards. Specifically:

- In December 2014, UPenn charged NSF Award No. (b) (4) for \$3,075 in indirect costs that UPenn had applied to lodging expenses for participants in an algebraic geometry workshop.
- In May 2016, UPenn charged NSF Award No. (b) (4) for \$6,026 in indirect costs that UPenn had applied to lodging expenses for six students participating in a Research Experiences for Undergraduates program.

UPenn Response:

UPenn does not contest this finding. We agree that due to an oversight, indirect expenses were charged in PSC in error. UPenn will remind central and departmental administrators of the importance of complying with UPenn's procedures for identifying and separately accounting for PSC on sponsored project funds. As recommended, UPenn will repay the NSF for the indirect costs charged associated with these transactions at the conclusion of the audit.

- ***Indirect Costs Inappropriately Applied to Graduate Student Stipends***

UPenn did not appropriately identify and account for stipend payments that it provided to graduate research fellows. As a result, UPenn inappropriately charged indirect costs to six NSF awards. Specifically:

- In May 2015, UPenn charged NSF Award No. (b) (4) for \$1,451 in indirect costs applied to fellowship stipends.
- In August 2015, UPenn charged NSF Award No. (b) (4) for \$2,175 in indirect costs applied to fellowship stipends.
- In September 2015, UPenn charged NSF Award No. (b) (4) for \$1,500 in indirect costs applied to fellowship stipends.
- In January 2016, UPenn charged NSF Award No. (b) (4) for \$783 in indirect costs applied to fellowship stipends.

- In March 2016, UPenn charged NSF Award No. (b) (4) for \$1,510 in indirect costs applied to fellowship stipends.
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$1,567 in indirect costs applied to fellowship stipends.

UPenn Response:

UPenn disagrees that graduate student payments were not appropriately identified and accounted, and resulted in inappropriately charging indirect costs to six NSF awards. UPenn's Negotiated Indirect Cost Rate Agreement (NICRA) references the exclusion of fellowships from the Modified Total Direct Cost Base (MTDC) for educational fellowships. The sampled transactions represent compensation paid to graduate students for work completed on sponsored projects as opposed to educational fellowships referenced in our NICRA. UPenn included these payments in our Research and Other Sponsored activities and Instruction MTDC base, and therefore, UPenn charged indirect costs appropriately and consistently in accordance with the NSF proposals and the F&A cost study for these payments. UPenn does not agree with the recommendation to refund the NSF for indirect costs associated with these payments.

• ***Indirect Costs Inappropriately Applied to Equipment Expenses***

UPenn inappropriately accounted for equipment purchases as materials and supplies expenses. As a result, it inappropriately charged indirect costs to four NSF awards. Specifically:

- In June 2015, UPenn charged NSF Award No. (b) (4) for \$5,715 in indirect costs associated with the purchase of a precision laminator.
- In March 2016, UPenn charged NSF Award No. (b) (4) for \$6,382 in indirect costs associated with the purchase of a replacement part for a laser.
- In July 2016, UPenn charged NSF Award No. (b) (4) for \$4,107 in indirect costs associated with the purchase of a force sensor.
- In December 2016, UPenn charged NSF Award No. (b) (4) for \$5,277 in indirect costs associated with the purchase of a server.

UPenn Response:

UPenn agrees that the precision laminator charged to NSF award No. (b) (4), the replacement part for the laser charged to NSF Award No. (b) (4), and the purchase of a server charged to NSF Award No. (b) (4) should have been accounted for as capital equipment and excluded from indirect costs on the awards. As recommended, UPenn will continue to remind administrators of the UPenn capital equipment policies and procedures. UPenn will refund the NSF for the indirect expense associated with these transactions at the conclusion of the audit.

UPenn does not agree that the expense charged to NSF Award No. (b) (4) for a total of \$6,845.21 in direct costs, was inappropriately accounted for as materials and supplies expense. The invoice for this purchase details three separate items, each of which is less than UPenn's capital purchasing threshold of \$5,000. Therefore, the accounting for these items and subsequent charging of indirect costs were handled correctly and in accordance with UPenn Financial Policies. UPenn does not agree that \$4,107.13 in indirect expense associated with material and supply cost should be refunded to the NSF.

- ***Indirect Costs Inappropriately Applied to Consultant Costs***

UPenn inappropriately accounted for subaward expenses as consulting costs. As a result, it inappropriately charged indirect costs to an NSF award. Specifically:

- In August 2016, UPenn charged NSF Award No. (b) (4) for \$16,812 in indirect costs associated with laboratory services that UPenn obtained from (b) (4) University that should have been invoiced under its subaward agreement with (b) (4) to provide services related to this NSF award.

UPenn Response:

UPenn agrees that the SOW included a subaward to (b) (4) and the sampled lab services provided by (b) (4) should have been accounted for in the general ledger as subaward expenses exceeding \$25,000 and excluded from indirect costs. The failure to execute the subaward was the result of turnover in the departmental business office. UPenn will ensure that departmental staff are reminded of UPenn's policy related to accounting for and recording subaward expenses appropriately. As recommended, UPenn will refund indirect costs associated with these transactions to the NSF at the conclusion of the audit.

- ***Indirect Costs Inappropriately Applied at the Wrong Rate***

UPenn inappropriately applied indirect costs at the rate included in the award's proposal rather than at the rate in effect as of the effective date of the award. Specifically:

- In September 2014, UPenn charged NSF Award No. (b) (4) for \$95 in indirect costs that exceeded the allowable indirect cost rate, as UPenn had applied indirect costs to salary expenses at the negotiated indirect cost rate included in the award proposal (i.e., 60 percent) rather than at the rate that was in effect as of the effective date of the award (i.e., 59 percent).

UPenn Response:

UPenn does not contest this finding. UPenn set up the award at the indirect rate included at the time of the proposal instead of the rate in effect at the time of the award. The central office responsible for sponsored project fund account set up and maintenance of indirect cost rate schedules implemented new procedures to ensure that indirect expense is calculated based on the transaction date of the direct cost. This will help ensure that rates in effect at the time of award

are used to calculate indirect cost. UPenn will continue to monitor award set ups to ensure the appropriate rates are included in the schedules. As recommended, UPenn will refund the NSF for the excess indirect expense associated with this transaction at the conclusion of the audit.

Finding 3: Unallowable Expenses

UPenn charged \$53,347 of unallowable expenses to eight NSF awards, as follows:

- ***Unallowable Salary Expenses***

UPenn inappropriately used the salary rate budgeted in the award proposal rather than the employee's actual salary rate when calculating salary expenses charged to an NSF award. Specifically:

- In December 2016, UPenn charged NSF Award No. (b) (4) for \$40,662 in direct and indirect salary expenses after providing a payment of \$19,370 to a post-doctoral employee the day before the employee terminated his or her employment at UPenn. Although UPenn had identified the post-doctoral employee as a participant on this award in the award's annual report, the amount of the payment was not based on the employee's actual effort or the salary appointment; instead, UPenn appears to have paid the employee based on the amount budgeted for their position over the course of the grant's 4-year POP. Because this payment appears to have been based on the funding available in the grant budget rather than on the employee's actual effort, all costs associated with this salary payment are unallowable.

UPenn Response:

UPenn disagrees that all costs are unallowable because the payments appear to have been made based on the amount budgeted for the period of performance. UPenn agrees that the payments were not timely; however, the project PI confirmed that the Post-Doctoral Fellow's work in support of the project was completed before his departure from UPenn, the annual report identified the post-doctoral student worked on the award, and the effort report was certified to reflect time was spent on the NSF award.

Effective July 1, 2019, UPenn will implement Workday for Human Capital Management. We believe the new human resource, payroll and financial management platform will strengthen administrative and management procedures over allocating salary expense to sponsored awards and reduce the risks associated with late payments on sponsored awards. UPenn does not agree with the recommendation to refund all costs associated with the salary payment to the NSF.

- ***Unallowable Travel Expenses***

UPenn inappropriately charged unallowable travel expenses to four NSF awards. Specifically:

- In September 2016, UPenn charged NSF Award No. (b) (4) for \$3,306 in airfare expenses incurred to allow the PI to travel to (b) (6) to perform grant-related research. The trip appears to have benefitted the objectives of this award; however, the PI upgraded to business-class travel for the return airfare. Because UPenn was unable to provide documentation either to support the allowability of the business-class flight or to identify the portion of the flight expense that related to business-class airfare, all costs associated with the business-class ticket are unallowable.

UPenn Response:

UPenn disagrees that all costs associated with this flight to (b) (6) to perform grant related research are unallowable. UPenn presented the auditor with a breakdown in the flights and costs for those flights, copies of the tickets documenting the cost, a copy of the original itinerary, description of travel, and UPenn's correspondence with UPenn's travel partner World Travel. Per the documentation, the PI used Economy class on all but one flight for the trip. The attached breakdown of costs by flight confirms that the flight on Friday, (b) (6) 2016 (Flight # (b) (6)) was the business class flight. The cost of that flight was \$253.00. UPenn agrees that this flight was upgraded to business class, and will, therefore, refund the NSF \$319.00 (including indirect cost of \$66.00) related to the upgraded portion of the flight at the conclusion of the audit. UPenn will strengthen its controls for reviewing expense reimbursement requests and travel charges appropriately to ensure expenses for upgraded airfare are not charged to a sponsored project award.

- In December 2016, UPenn charged NSF Award No. (b) (4) for \$3,864 in airfare expenses incurred to allow a graduate student to participate in a grant-related conference. The trip appears to have benefitted the objectives of this award; however, \$640 of the expense related to additional costs incurred for premium economy seating. Because UPenn did not specifically approve the premium economy airfare, the upgraded airfare expenses are unallowable.

UPenn Response:

UPenn does not contest this finding. UPenn agrees that the graduate student participated in the project and was approved to attend the conference. We agree that the request to purchase premium economy seating should have been granted prior to booking and reimbursing the student for airfare. UPenn will strengthen its controls for reviewing expense reimbursement requests and travel charges appropriately to ensure unapproved expenses for upgraded airfare are not charged to a sponsored project award. UPenn will refund \$640 associated with additional costs incurred for the upgraded premium economy seating at the conclusion of the audit.

- *Unallowable Foreign-Air Carrier Airfare*

- In May 2014, UPenn charged NSF Award No. (b) (4) for \$58,811 in travel expenses based on the PI's request for a travel advance for a grant-related research trip to (b) (6). The trip appears to have benefitted the objectives of this award; however, the documentation that UPenn provided to support the actual use of the travel advance included airline receipts from (b) (6) a non-U.S. flag carrier. Because the PI was required to comply with the *Fly America Act* on two of the flights (b) (6) took for this trip (one from (b) (6) to (b) (6) and one from (b) (6) to (b) (6)), the portion of the travel expenses associated with these flights, or \$1,044, is unallowable.

UPenn Response:

UPenn does not contest this finding and questioned cost. UPenn was unable to locate the documentation to support an exception to the *Fly America Act* for the PI's travel via (b) (6). UPenn will remind staff of the *Fly America Act* requirements and the need to review foreign travel carefully for compliance prior to allocating the expense to a sponsored project award. UPenn will refund \$1,044 to the NSF for costs associated with the two flights at the conclusion of the audit.

o *Other Unallowable Travel*

- In December 2015, UPenn charged NSF Award No. (b) (4) for \$3,892 in travel expenses incurred to allow a graduate student to participate in a grant-related workshop. The general purpose of the trip appears to have benefitted the objectives of the award; however, 3 days of the trip do not appear to have had a business purpose. Because UPenn was unable to provide sufficient documentation to support a business purpose for the final 3 days of the trip, the portion of the travel expenses associated with those days, or \$575, is unallowable.

UPenn Response:

UPenn does not contest this finding. We were unable to locate additional documentation, receipts or support for the business nature of the additional days therefore the expenses associated with the additional travel days for meals and hotel stay prior to the day before and day after the conference will be refunded to the NSF. UPenn will strengthen its controls for reviewing expense reimbursement requests and travel charges appropriately to ensure compliance with UPenn's business travel and expense reimbursement policies.

• *Unallowable Relocation Expenses*

UPenn inappropriately charged unallowable relocation expenses to an NSF award. Specifically:

- o In September 2016, UPenn charged NSF Award No. (b) (4) for \$4,840 in relocation expenses incurred for a post-doctoral employee to move from (b) (6) to Pennsylvania. Because UPenn did not specifically request funding to support

the employee's relocation expenses, did not include this funding in the award's budget, and did not identify the post-doctoral employee in the budget justification, all costs associated with the relocation are unallowable.

UPenn Response:

UPenn disagrees with the assertion that relocation charges are an unallowable expense on this award. The project's awarded budget specified a post-doctoral fellow 'to be determined.' The award coincided with the finalized appointment of this individual. The post-doctoral fellow relocated from (b) (6) to join this project fulltime and all of his efforts were dedicated to this award. We agree that the budget did not include funding for relocation expenses and due to an oversight we did not request prior approval of relocation expenses prior to charging the expense to the award. We do not agree that the relocation cost are unallowable and should be refunded to the NSF. UPenn agrees with the recommendation to improve controls around these processes. We will focus on strengthening departmental administrative procedures over allocating expenses to sponsored awards to include review of relocation expenses prior to charging the expenses to sponsored project awards. UPenn does not agree with the recommendation to repay the NSF all costs associated with the relocation expense.

• ***Unallowable Entertainment and Alcohol Related Expenses***

UPenn inappropriately charged unallowable entertainment and alcohol related expenses to two NSF awards. Specifically:

- In January 2015, UPenn charged NSF Award No. (b) (4) for \$2,190 in expenses related to an "(b) (4) Recruitment/End of Year Dinner." The grant budget included \$2,990 for refreshments for (b) (4) meetings; however, the budget justification indicated that the funding would be used for \$115 of refreshments provided at approximately one meeting per week. In addition, this dinner appears to have been entertainment-related, based on the PI's statement that the dinner was "an important contributor to creating a sociable and welcoming atmosphere." As a result, all costs associated with the dinner are unallowable
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$90 in unallowable alcohol-related expenses incurred for a grant-supported event.

UPenn Response:

UPenn does not contest the findings. UPenn agrees with the recommendations to enhance procedures to require review of food and beverage, and alcohol expense charges prior to charging to a federal sponsored project. The departmental administrative and management functions will develop procedures that will encompass reviews of reimbursement requests ensuring food and beverage costs are being allocated correctly. Furthermore, restructuring of the administrative functions will allow for additional levels of review. UPenn will issue a memo to existing faculty and staff reinforcing the travel and entertainment policies and procedures. UPenn agrees with the recommendation to refund the NSF for all expenses associated with the finding for unallowable entertainment and alcohol expense at the conclusion of the audit.

Finding 4: Expenses Not Appropriately Allocated to NSF Awards

UPenn did not allocate expenses to NSF awards based on the relative benefits received by the awards, as required by Federal policies. Specifically, UPenn inappropriately allocated \$8,853 in expenses to three NSF awards, as follows:

- In March 2014, 2 months after NSF Award No. (b) (4) expired, UPenn charged the award for \$6,466 in expenses related to a graduate student's Fall 2013 and Spring 2014 tuition. The award's budget included funding to support graduate students; however, the graduate student's tuition does not appear to be allocable to this award, as the student certified that 100 percent of his or her effort was allocable to a different sponsored award and UPenn did not identify the student as a participant on this award in the award's annual report. In addition, we noted that the student incurred the majority of his or her spring 2014 tuition expense after the award's POP expired. Because the tuition expenses do not appear to have benefitted this NSF award, UPenn should not have allocated the expenses to the award.

UPenn Response:

UPenn does not contest this finding. As recommended, UPenn will enhance administrative and management controls surrounding the allocation of expenses to sponsored awards. The University will disseminate a memo to faculty and designated staff on how to properly justify and document the allocation methodology for expenses on sponsored awards. UPenn agrees with the recommendations to refund the NSF for the tuition expense charged to the award at the conclusion of the audit.

- In December 2015, UPenn charged NSF Award No. (b) (4) for \$2,285 in travel expenses that the PI incurred to travel to (b) (6) to visit a colleague. As a result of our audit, the PI determined that this trip did not benefit this NSF award. UPenn therefore should not have charged these expenses to the award.

UPenn Response:

UPenn does not contest this finding. UPenn agrees that the charge in question was not journaled off of the grant in a timely manner. Staff turnover in the department's regional business office contributed to this oversight. UPenn will continue to focus on ensuring timely identification of unallocable charges and timely transfer of the charges off of the sponsored project account. UPenn agrees with the recommendation to repay the NSF for the unallocable travel charges at the conclusion of the audit.

- In June 2016, UPenn charged NSF Award No. (b) (4) for \$102 in change fees that the PI incurred to leave a grant-related conference early to attend a non-grant-related meeting in (b) (6). Because the change fee does not appear to have benefitted the NSF award charged, UPenn should not have allocated this expense to the award.

UPenn Response:

UPenn does not contest this finding. UPenn will strengthen the administrative and management controls and processes over allocating travel expenses to sponsored project awards. UPenn agrees with the recommendation to repay the NSF for all expenses related to the change fees at the conclusion of the audit.

Finding 5: Incorrect Application of Fringe Benefits

UPenn incorrectly applied \$504 of fringe benefits to salary expenses incurred during the audit period, as follows:

- In August 2014, UPenn charged NSF Award No. (b) (4) for \$146 in fringe benefit expenses that UPenn had inappropriately applied to salary costs. UPenn incorrectly applied these fringe benefits at the rate in effect at the time of the transaction (i.e., 32 percent), rather than at the rate in effect at the time UPenn paid the original salary (i.e., 31.8 percent).
- In September 2016, UPenn removed salary costs from NSF Award No. (b) (4); however, it did not appropriately remove \$336 of the fringe benefit expenses it had applied to those salary costs. UPenn incorrectly removed the fringe benefits at the rate in effect at the time of the transaction (i.e., 31.2 percent), rather than at the rate in effect at the time UPenn paid the original salary and charged it to the award (i.e., 32.2 percent).
- In November 2016, UPenn removed salary costs from NSF Award No. (b) (4); however, it did not appropriately remove \$22 of the fringe benefit expenses it had applied to those salary costs. UPenn incorrectly removed the fringe benefits at the rate in effect at the time of the transaction (i.e., 31.2 percent), rather than at the rate in effect at the time UPenn paid the original salary and charged it to the award (i.e., 32.2 percent).

UPenn Response:

UPenn does not contest this finding. UPenn agrees with the recommendation to ensure employee benefits are applied and refunded at the rate in effect at the time the expense is incurred. UPenn will revisit its closeout procedures to ensure that reconciliations for employee benefit rates are performed based on salary cost for the fiscal year the salary expense was originally incurred. UPenn agrees with the recommendation to refund the NSF for all costs associated with the inappropriately applied employee benefit expenses at the conclusion of the audit.

Finding 6: Improperly Approved Subaward Payments

- *Unsupported Invoice Approvals*

UPenn was unable to provide support demonstrating that it had appropriately reviewed and approved five sampled subawardee invoices before paying the invoices. Specifically:

- In November 2014, UPenn charged NSF Award No. (b) (4) for \$26,832 related to a subaward payment to (b) (4) University.
- In May 2015, UPenn charged NSF Award No. (b) (4) for \$1,042 related to a subaward payment to (b) (4) University.
- In June 2015, UPenn charged NSF Award No. (b) (4) for \$2,728 related to a subaward payment to (b) (4) University.
- In August 2015, UPenn charged NSF Award No. (b) (4) for \$2,728 related to a subaward payment to (b) (4) University.
- In June 2016, UPenn charged NSF Award No. (b) (4) for \$37,271 related to a subaward payment to the (b) (4) for the (b) (4) (b) (4)

UPenn Response:

UPenn does not contest these findings. As recommended, UPenn agrees to strengthen administrative and management controls over reviewing and approving subaward expenses charged to sponsored research awards. As recommended, UPenn agrees to continue to require periodic training for departments involved in managing subaward expenses on sponsored awards. UPenn will also remind administrators of the importance of complying with UPenn policy related to managing subrecipient activities. UPenn will also implement periodic reviews to ensure PI's properly document approval of subaward invoices before paying invoices and throughout the life of the subaward.

• ***Expired Subaward Payment***

UPenn inappropriately paid an invoice related to an expired subaward. Specifically:

- In November 2015, UPenn charged NSF Award No. (b) (4) for \$21,155 related to a subaward payment to the (b) (4) for work performed from July through September 2015. The (b) (4) performed the invoiced services during the NSF award's POP; however, the POP for UPenn's subaward agreement with the (b) (4) ended in September 2014. Because the work performed appears to have been within the scope of the original award and UPenn incurred the expenses during the NSF award's POP, we are not questioning any costs associated with this invoice. However, we are noting a compliance exception.

UPenn Response:

UPenn does not contest this compliance finding. UPenn agrees that (b) (4) performed services included in the scope of the award; however, due to an oversight, the subaward to the (b) (4) was not documented appropriately. UPenn agrees with the recommendation to strengthen administrative and management controls related to subawards. UPenn will remind administrators of the importance of complying with UPenn policies related to managing

subrecipient activities. UPenn will also implement periodic reviews to ensure PI's properly document approval of subaward invoices periodically before paying invoices and throughout the life of the subaward.

Finding 7: Incorrect Application of Proposed Indirect Cost Rates

UPenn applied incorrect indirect cost rates to direct expenses accumulated on seven NSF awards. For each of these awards, UPenn applied the NICRA rate that was in effect at the time it submitted the grant proposal, rather than the rate that was in effect as of the effective date of the NSF award. As a result, UPenn applied indirect costs at a rate that was lower than was the approved NICRA rate as of the effective date of the award.

UPenn Response:

UPenn does not contest this compliance finding. UPenn implemented Oracle Grants Management System (GMS) in April 2014. The system has given UPenn increased control over how indirect costs are calculated for sponsored programs. The functionality within the GMS allows UPenn to create separate Indirect Cost Burdening Schedules at different rates based on the transaction date of the direct cost. This helps ensure rates are calculated correctly based on when cost are incurred. As recommended, UPenn will continue to focus on improving its administrative and management controls over establishing indirect cost rates to ensure appropriate costs are charged based on the rates in effect at the time the original expense is incurred.

Finding 8: Non-Compliance with UPenn Travel Policies

UPenn did not comply with its own internal policies and procedures when incurring travel costs on NSF awards, as follows:

- ***Failure to Document Constructive Airfare Costs***

We identified one instance in which UPenn allowed a traveler to combine personal travel with business-related travel but did not properly obtain or document the constructive airfare cost associated with the business portion of the trip to verify that the personal travel expenses did not increase the costs charged to NSF awards. Specifically, in July 2016, the PI for NSF Award No. (b) (4) traveled from (b) (6) to (b) (6) for a conference. On the way back, the PI spent 2 extra days on a layover in (b) (6) for personal travel. UPenn stated that there were no direct flights from (b) (6) to (b) (6) but did not maintain documentation that taking a return flight through (b) (6) 2 days after the conference ended would not or did not increase the airfare costs incurred. Because the costs appear reasonable and UPenn maintains that it verified the costs at the time the PI purchased the tickets, we are only noting a compliance exception.

UPenn Response:

UPenn does not contest this compliance finding. UPenn agrees with the recommendation to strengthen administrative and management procedures over travel on sponsored awards. UPenn will remind faculty and staff of UPenn policies and procedures related to personal trips during business travel. UPenn will also remind faculty and staff of departmental internal processes for school level review and approval for air travel on sponsored project awards.

- ***Failure to Document Reconciliation of Travel Advances***

We identified two instances in which UPenn employees did not appropriately reconcile or account for a travel advance within 120 days of returning from a trip. Specifically:

- In February 2014, UPenn charged NSF Award No. (b) (4) for a \$15,550 travel advance to the PI for anticipated field research expenses in (b) (6). UPenn provided receipts documenting that the PI incurred more than \$15,550 in expenses to support the actual use of the travel advance; however, UPenn was unable to provide support demonstrating that the PI had appropriately reconciled or accounted for the travel advance within 120 days of completing the trip, as required by UPenn policy.
- In April 2014, UPenn charged NSF Award No. (b) (4) for a \$58,000 travel advance to the PI for anticipated field research expenses in (b) (6). UPenn provided receipts demonstrating that the PI incurred more than \$58,000 in expenses to support the actual use of the travel advance; however, UPenn was unable to provide support demonstrating that the PI had appropriately reconciled or accounted for the travel advance within 120 days of completing the trip, as required by UPenn policy.

UPenn Response:

UPenn does not contest this compliance finding. Travel advances and reconciliations were completed in a paper process at the time of the travel advance on these awards. UPenn retained complete and detailed reconciliation documentation on file including receipts and spreadsheets; however, some of the documentation had not been retained in the grant file. UPenn has since transitioned to an electronic system for all travel advances and reconciliations. The Concur TEM system has controls which enable UPenn to ensure advances are reconciled and electronic records are retained in accordance with the UPenn record retention policies. As recommended, UPenn will remind faculty and staff of the importance of complying with UPenn travel policies and procedures and continue to strengthen the administrative and management procedures around timely reconciliation of travel advances on sponsored awards.

Conclusion:

UPenn takes the audit process seriously and considers it an integral component of the University's ongoing program of internal controls. We believe that this audit will assist us in

strengthening our sponsored programs administrative management controls and processes. We thank you for the opportunity to respond to the NSF Performance Audit of Cost incurred.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

(b) (6)

Elizabeth Peloso
Associate Vice President and Associate Vice Provost
University of Pennsylvania,
Office of Research Services

APPENDIX C: OBJECTIVES, SCOPE, AND METHODOLOGY

OBJECTIVES, SCOPE, AND METHODOLOGY

The NSF OIG Office of Audits engaged Cotton & Company LLP (referred to as “we” in this report) to conduct a performance audit of costs that UPenn incurred on NSF awards for the period from March 1, 2014 to February 28, 2017. The objective of the audit was to determine if costs claimed by UPenn during this period were allocable, allowable, reasonable, and in conformity with NSF award terms and conditions and applicable Federal financial assistance requirements.

Our work required us to rely on computer-processed data obtained from UPenn and NSF OIG. NSF OIG provided award data that UPenn reported through ACM\$ during our audit period. UPenn provided detailed transaction-level data to support all costs charged to NSF awards during the period. This resulted in a total audit universe of \$117,472,108 in costs claimed on 467 NSF awards.

We assessed the reliability of the data provided by UPenn by (1) comparing costs charged to NSF award accounts within UPenn’s accounting records to reported net expenditures, as reflected in UPenn’s ACM\$ drawdown requests submitted to NSF for the corresponding periods; and (2) reviewing the parameters that UPenn used to extract transaction data from its accounting records and systems.

Based on our assessment, we found UPenn’s computer-processed data to be sufficiently reliable for the purposes of this audit. We did not review or test whether the data contained in, or the controls over, NSF’s databases were accurate or reliable; however, the independent auditor’s report on NSF’s financial statements for FY 2017 found no reportable instances in which NSF’s financial management systems did not substantially comply with applicable requirements.

UPenn management is responsible for establishing and maintaining effective internal controls to help ensure that it uses Federal award funds in compliance with laws, regulations, and award terms. In planning and performing our audit, we considered UPenn’s internal controls solely to understand the policies and procedures relevant to the financial reporting and administration of NSF awards to evaluate UPenn’s compliance with laws, regulations, and award terms applicable to the items selected for testing, but not to express an opinion on the effectiveness of UPenn’s internal controls over award financial reporting and administration. Accordingly, we do not express an opinion on the effectiveness of UPenn’s internal controls over its award financial reporting and administration.

After confirming the accuracy of the data provided, but before performing our analysis, we reviewed all available accounting and administrative policies and procedures, relevant documented management initiatives, previously issued external audit reports, and desk review reports to ensure that we understood the data and identified any possible weaknesses within UPenn’s system that warranted focus during our testing.

We began our analytics process by reviewing the transaction-level data that UPenn provided and using IDEA software to combine it with the NSF OIG-provided data. We conducted data mining and data analytics on the entire universe of data provided and compiled a list of transactions that

represented anomalies, outliers, and aberrant transactions. We reviewed the results of each of our data tests and judgmentally selected transactions for testing based on criteria including, but not limited to, large dollar amounts, possible duplications, indications of unusual trends in spending, descriptions indicating potentially unallowable costs, cost transfers, expenditures outside of an award's period of performance, and unbudgeted expenditures.

We identified 250 transactions for testing and requested that UPenn provide documentation to support each transaction. We reviewed this supporting documentation to determine if we had obtained sufficient, appropriate evidence to support the allowability of the sampled expenditures. When necessary, we requested and reviewed additional supporting documentation and obtained explanations and justifications from PIs and other knowledgeable UPenn personnel until we had sufficient support to assess the allowability, allocability, and reasonableness of each transaction.

We discussed the results of our initial fieldwork and our recommendations for expanded testing with NSF OIG personnel. Based on the results of this discussion, we used IDEA software to select an additional judgmental sample of 50 transactions. We requested and received supporting documentation for the additional transactions and summarized the results in our final fieldwork summary.

At the conclusion of our fieldwork, we provided a summary of our results to NSF OIG personnel for review. We also provided the summary of results to UPenn personnel to ensure that they were aware of each of our findings and that no additional documentation was available to support the questioned costs.

We conducted this performance audit in accordance with *Generally Accepted Government Auditing Standards*. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.